SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report

Proposed Amended Rule 1148.1 – Oil and Gas Production Wells

June 2015

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EXECUTIVE SUMMARY

Rule 1148.1 – Oil and Gas Production Wells was adopted on March 5, 2004 to reduce volatile organic compound (VOC) emissions from well cellars as well as from sources of untreated process gas located at oil and gas production facilities. The rule includes requirements for visual inspection and maintenance programs and for controlling untreated produced gas. An increased awareness of oil and gas production wells due to community concerns over potential environmental impacts from well stimulation techniques such as hydraulic fracturing has resulted in a goal to minimize impacts to nearby residents and sensitive receptors from ongoing operations that do not include drilling. The proposed amendment seeks to include additional prevention measures and other best practices in an effort to reduce the potential for odor nuisance and exposures from oil and gas production facilities, especially those within 1,500 feet of a sensitive receptor. Further, the proposed amendment seeks to make administrative changes to the rule by removing obsolete rule language and making minor revisions.

The proposed amendment incorporates some of the information gathered through the reporting mechanisms provided by Rule 1148.2 - Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers adopted, April 5, 2013. The South Coast Air Quality Management District (SCAQMD) intends to further refine and analyze the data obtained from implementation of Rule 1148.2 as part of a subsequent effort to report findings and recommendations for the need, if any, for emission controls or regulatory efforts related to well drilling, well completion, and well rework.

As a separate, but concurrent effort, proposed amendments to Rule 1148.1 address the production and maintenance aspects of an operating oil and gas well, rather than the pre-production or stimulation aspects covered under the requirements of Rule 1148.2.

Currently production wells, primarily due to low emission potential, are currently registered under Rule 222 - Filing Requirements For Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II and do not require full permits. However, if these same wells have associated equipment (i.e. separation tanks, wastewater separators), the facility requires a comprehensive analysis under Rule 203 - Permit to Operate, and subject to Regulation XIII requirements, as applicable.

There is no anticipated significant cost increases associated with the proposed amendment because the amended rule focuses on improving work practices and establishing odor mitigation procedures as a contingency, rather than on additional engineering controls. Any additional cost impact associated with implementation of improved work practices, specific cause analyses and odor mitigation procedures are expected to be administrative and nominal.

BACKGROUND

Introduction

The process of moving oil and gas from underground reservoirs to above ground storage is described as a "pipeline process" since oil and gas in its natural state uses natural pressure or mechanical forces to move the oil and gas through miles of pipeline to the wellhead and is then transported by more piping to storage. In the life of an oil well, there are phases which dictate the type of equipment to be used and the work practices and maintenance procedures that will be implemented. These operations have been historically regulated and permitted by the California Division of Oil, Gas and Geothermal Resources (DOGGR). The phases include: exploration, well development, production and well abandonment. Rule 1148.1 applies principally to the production phase, whereas Rule 1148.2 applies to the exploration, well development and well rework phases. DOGGR continues to regulate site abandonment activities.

Figure 1 below outlines the overall oil and gas well lifecycle and the associated regulatory applicability with respect to activities covered under Rule 1148.1 and Rule 1148.2:

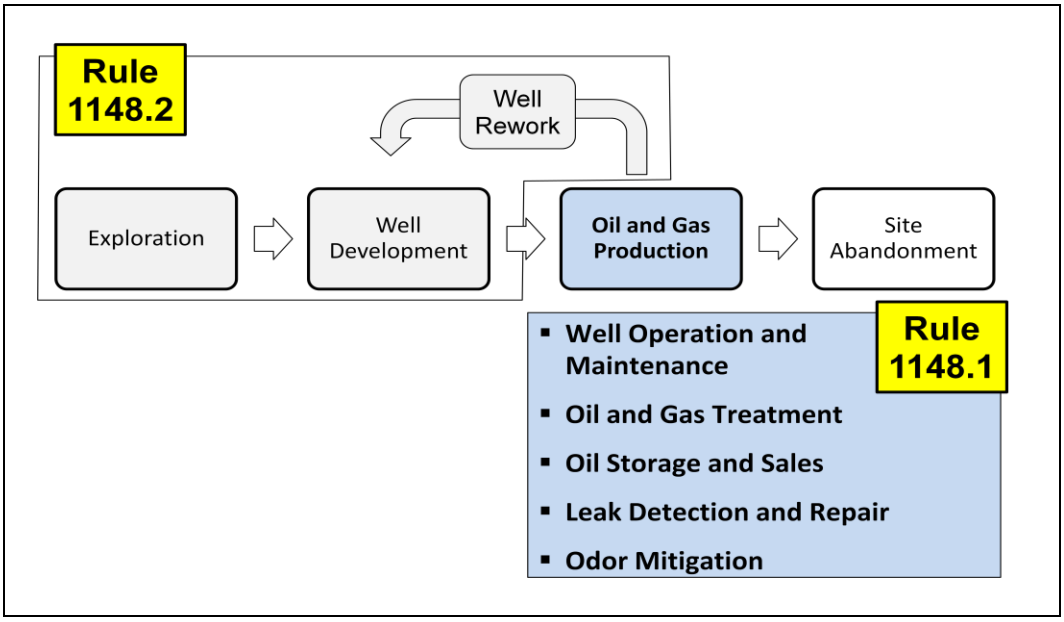


Figure 1. Typical oil and gas production facility processes and SCAQMD rule applicability

Exploration

Exploratory wells are drilled into underground formations in hopes of locating a new source of fossil fuel. This type of well represents a risk for the company conducting the drilling, not only for the high cost, but also due to the uncertainty in the quantity of oil or natural gas it might contain. The well may turn out to be a profitable new source of fossil fuel, or it may contain quantities of fuel that are not profitable to extract. In the latter case, the well may be plugged and abandoned.

When oil deposits are discovered, a crude oil reservoir can contain a mixture of water, as well as oil and gas in the small pore spaces in the reservoir rock. Initially, the reservoir holds these fluids under considerable pressure, caused by the hydrostatic pressure of the groundwater. At this pressure, a large part of the gas is dissolved in the oil. These two fluids, the initial water and the gas in solution, combine to provide the driving force for moving the oil into the well where it is pushed upward by the underlying pressure.

This operation is the subject of Rule 1148.2.

Well Development

Development wells are typically drilled within an area that has already proven to be productive. Once oil or gas is discovered in a commercially viable quantity, development wells are drilled to continue to recover as much of the oil or gas as possible. There are also service wells which are drilled for injecting liquids or gases into an underground formation in order to increase the pressure and force the oil toward the producing wells. Service wells also include wells drilled for the underground disposal of water produced with the oil and gas.

This operation is also the subject of Rule 1148.2.

Production

After drilling, an oil well is constructed essentially as a pipeline, reaching from the top of the ground to the oil-producing formation. It is through this pipe that oil is brought to the surface. The pipeline is a series of joints of a special kind of pipe (casing) screwed together to form a continuous tube for the oil and gas to flow through. Sometimes in drilling a well, more than one commercially productive formation is found. In such cases a separate tubing string is run inside the casing for each productive formation. Production from the separate formations is directed through the proper tubing strings and is isolated from the others by packing that seals the annular space between the tubing strings and casing. These are known as multiple completion wells.

The production stage is the most important stage of a well's life, when the oil and gas are produced. By this time, the rigs used to drill and complete the well have moved off the wellbore, and the top is usually outfitted with a collection of valves called a "Christmas tree" or production tree. These valves regulate pressures, control flows, and allow access to the wellbore in case further completion work is needed. From the outlet valve of the production tree, the flow can be connected to a distribution network of pipelines and tanks to process the produced oil, gas and water, and subsequently supply the product to refineries, natural gas compressor stations, or oil export terminals.

As long as the pressure in the reservoir remains high enough, the production tree is all that is required to produce the well. If the pressure depletes and it is considered economically viable, an artificial lift method can be employed to withdraw the remaining product from the reserve.

Currently there are four common methods of artificial lift used in the industry today: they are beam pumping, submersible pumping, gas lift and hydraulic pumping.

For beam pumping, the pump is designed to be inserted inside the tubing of a well and its main purpose is to gather fluids from beneath the surface and lift them to the surface. The most important components are the barrel, valves (traveling and fixed) and the piston. The pump is connected to the pumping unit at the surface by a string of sucker rods. Sucker rods are stroked up and down the tubing, activating the pump at the bottom. At the surface a large mechanical device called the beam pumping unit is attached. Depending on the size of the pump, it generally produces 5 to 40 liters of liquid at each stroke. Often this is an emulsion of crude oil and water. One of the advantages of beam pumping is high efficiency; however, it is limited to relatively low production volumes, less than 1,000 barrels per day (bpd).

Submersible pumping consist of an electrical motor attached to a pump on the end of the tubing string. The electrical motor turns a centrifugal pump which forces oil from the bottom of the well, up through the inside of the tubing, and out at the surface. The electricity is supplied through an electric cable attached to the side of the tubing and connected to the electric motor. The Submersible Pumping has high volume and depth capacity and high efficiency over 1,000 bpd. However, this type of artificial lift has poor ability to pump sand.

Another type of artificial lift is gas lift, which involve a series of devices called gas lift valves that are inserted into the sides of the tubing. The gas is injected into the well through the tubing casing annulus and enters the tubing through the gas lift mandrels and gas lift valves. The fluid in the tubing is made lighter by the gas, and as a result, the mixture is pushed to the surface by the reservoir pressure. The advantage of using gas lift equipment is that the process closely resembles the natural flow process and basically operates as an enhancement or extension of that process. The only major requirement is an available and economical supply of pressurized gas. The draw back in using this system is high initial capital cost, high level of maintenance and complex operation.

The last artificial lift method is hydraulic pumping where high pressure oils are pumped into the well through the tubing string. At the bottom of the well, the pressured oil enters a mechanical device, causing it to reciprocate. This mechanical device activates a pump which lifts the oil from the producing formation, together with expended powered oil to the surface. The system consists of a surface power fluid system, a prime mover, a surface pump, and a down hole jet or pump. Power fluid from the surface actuates the engine, which in turn drives the pump and power fluid returns to the surface with the produced oil. The Advantages of hydraulic pumping is that there are no moving parts and high volume capability. The downside is the high initial capital cost and the difficulty of operation.

This operation is subject to Rule 1148.1.

Site Abandonment

Once a production well oil and gas reservoir is depleted, the well is abandoned and the site is cleaned up. Requirements include plugging the depleted reservoir hole with cement to protect all underground strata. This prevents any flow or leakage at the surface and protects the water zone, in accordance with California Code of Regulations, Subchapter 4, and section 1920.1. Equipment that is salvageable is removed; pits used in the operation are filled in and the site is re-graded. Wherever practical the ground is replanted with grass or other kinds of vegetation and sometimes, buildings are constructed on the site.

This activity is regulated by DOGGR.

Ancillary

There are additional ancillary procedures and equipment that are used across all phases of oil and gas production, including overall facility and equipment maintenance and spill containment and spill response. The emissions related aspects of these activities are subject to Rule 1148.1.

Maintenance

Maintenance is necessary and required to ensure smooth operation in a safe manner and to minimize emissions during all phases of oil well operations. General maintenance includes repairing or replacing pull rods or well casings using workover rigs, as well as inspecting and repairing pumps and other equipment used in production.

Spill Containment and Spill Response

Oil and gas production facilities utilize various forms of spill control and countermeasures to address handling of hazardous materials. Primary containment consists of a permanent structure that holds the hazardous material (oil), such as tanks and piping. In many cases well cellars are used to provide secondary containment. On-shore oil and gas production facilities are also subject to federal requirements for spill control under 40 CFR part 112.

Typical Emission Sources

Wellheads

Wellheads are susceptible to liquid leaks especially where the stuff box is poorly maintained or when large valves are opened and then closed, which often produces a noticeable amount of liquids, including hydrocarbons. If the liquid is allowed to stand over an extended period, VOC emissions and related odors may be released to the atmosphere, and may lead to odor nuisance complaints from the local community.

Well Cellars

In most cases the wellhead resides in or above the well cellar, a small subsurface containment basin used to capture any leaking liquid from oil and gas extraction or

maintenance or from workover of the well or wellhead. Well cellars can be lined or unlined and there can be one or more wellheads allocated to a well cellar. On average, a well cellar has approximate dimensions of 6 feet by 6 feet with a depth of between 5 feet to 8 feet. Since there needs to be access to wellheads for maintenance and sampling, well cellars are uncovered and can become sources of VOC emissions and associated odors when crude oil is collected and retained in this containment area for an extended period of time.

Separation and Treatment

After the well fluids and gas reach the wellhead they are transferred to a treatment plant. At the treatment plant, the crude oil, natural gas, produced water and solid contaminants are separated and treated. A treatment plant may be simple or complex and can take many different forms depending on treatment needs. Typically, the treatment plant includes a well flow-line manifold in addition to separators, free water knockout vessels, heaters (if crude is heavy), heater-treaters, wash tanks, stock tanks, wastewater separators or oil/water separators, sumps, pits, ponds and a vapor recovery unit.

Some of the equipment that require permits by the SCAQMD include American Petroleum Institute (API) separators, tanks, vessels, heaters, boilers, vapor recovery units, internal combustion engines and clean-out sumps, which are in most cases part of the wastewater system permit unit, oil dehydration unit or water injection facilities. Open ditches also require a permit, but there are no active permits currently in the South Coast Air Basin. Wastewater associated with the separation and treatment process is regulated by Rule 1176 – VOC Emissions from Wastewater Systems adopted November 3, 1989.

The well fluids (oil/water) and gas mixture flows to a well manifold that connects with each well in the field. From the manifold, the mixture is directed to either a test or a production separator, which separates and measures the three phases separately and is used to determine the production of each well. Under normal conditions, the mixture flows to a production separator or free water knockout where gas is separated from the mixture. From there, the oil/water stream flows to a free water knockout vessel, a heater treater, a wash tank and an oil/water separation vessel where water is removed from the oil. After it is determined that there is a sufficient reduction of water content, the oil flows to an oil storage or stock tank. Upon sale, the oil flows through Lease Automated Custody Transfer (LACT) units for metering.

Gases removed from the oil during treatment may be further treated and then 1) sold to a utility; 2) used as fuel by the operator; 3) re-injected into the reservoir for pressure maintenance; or 4) vented to the atmosphere, a practice largely eliminated by the requirements of Rule 1148.1 which provides for the use of air pollution control devices in lieu of venting, except in the case of emergency upset conditions or certain smaller producing wells. Gas collected from separators and oil treaters, along with vapors from storage tanks, may be processed through a glycol dehydration unit. This unit removes the water from the gas before it is put into a sales pipeline or used again in the dehydration process. A common practice to control production gas from small

to medium operations is to use a gas-fired heater that burns the facility's gas and produces heat to reduce the viscosity of the crude oil product. . Reducing the viscosity of crude oil facilitates the handling within the production operation or the transport via pipeline to the refineries. Some facilities use the production gas to fuel micro-turbines for onsite power needs. However, based on a review of permitted oil and gas production facilities, ten facilities have a permit for flares that may be used to burn excess or off specification gas.

The oily water collected from the separators and the oil treaters may flow directly to a sump or may flow to a water treatment facility prior to disposal. At the water treatment facility, the oil content of the water is reduced by skimming tanks, dissolved air flotation units, pits, filters or a combination of these. The water may be used on-site, discharged to the surface following proper treatment, or injected back into water injection wells or disposal wells. Vapor recovery is usually on all of the separation vessels and is piped back to the gas pipeline for dehydration.

Workover Rig Operations

Workover Rigs are mobile temporary derrick stands that allow the operator to access and replace worn out push rods and piping. These rods are between 32 to 46 feet in length and are removed and stored vertically. The rods and the piping are pulled up through a casing which is filled with oil and other organic liquid. As a result of their removal, the rods and piping may be wetted with hydrocarbon liquid and have the potential to cause emissions and odor nuisances. While the amount of VOC emissions released to atmosphere is short-term, the odor potential is great, unless measures are taken to wipe excess material during removal, such as the use of a grommet.

Workover rigs are used primarily for maintenance on established production wells, and are typically powered by the internal combustion engine (ICE) used for transporting the rigs over the road to the site. These workover rigs typically use diesel fuel ICEs, with a trend to repower or purchase new rigs with diesel engines that meet CARB's new On-Road Heavy Duty Engines Tier IV standards. Workover rigs are generally smaller units with less power demands than drilling rigs. However, there are occasions where extensive maintenance work would require a supplemental electrical generator to provide additional power. These generators and the portable or temporary ICEs are a potential source of odors and particulate emissions.

Odor and Potential Health Effects

The presence of odors does not necessarily relate to the presence or absence of toxic air contaminants, and odor issues are generally addressed as public nuisance. Odor complaints, however, are often accompanied by reports of adverse effects such as headache and nausea.

As to whether odors can cause health effects, the American Thoracic Society (ATS), a scientific society that focuses on respiratory and critical care medicine, published its official guidelines as to what constitutes an adverse health effect in 1985, and updated

these guidelines in 1999. The statement is intended to "provide guidance to policy makers and others who interpret the scientific evidence for the purpose of risk management."[1] The statement acknowledges that there are graduations in the degree of effects and also differentiate between an effect that is adverse from an effect that is merely a physiological response. The ATS statement indicates that air pollution exposures which interfere with the quality of life can be considered adverse. Thus odor-related annoyance should be considered adverse, even if nausea or headache or other symptoms are not present. In the ATS guidelines, odors are clearly listed as an adverse respiratory health effect.

Unpleasant odors have long been considered as warning signs of potential health risks. Such odors often elicit complaints of respiratory irritation, headache, nausea and other adverse symptoms. While the mechanism for the production of these effects is not known, these effects have been noted at concentrations of substances that produce unpleasant odors. Postulated mechanisms include neurological changes in sensory nerves that could influence symptom production in the absence of other toxicological effects.[2]

Regulatory History

Rule 1148.1

Rule 1148.1 was adopted on March 5, 2004 to implement Control Measure FUG-05 of the 2003 AQMP by reducing VOC emissions from well cellars and wellheads at oil and gas production operations through increased inspection and maintenance, and control of produced gas emissions, with additional regulatory considerations when located within 100 meters to sensitive receptors. Rule 222 - Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II, traditionally used for simpler, low-emitting, packaged or off the shelf equipment, was concurrently amended to include well cellars and wellheads at oil and gas production facilities subject to Proposed Rule 1148.1 in the filing program, in lieu of conventional permitting.

BACT and BARCT

The application of Best Available Control Technology and Best Available Retrofit Control Technology (BACT and BARCT) are required and implemented on control devices for the oil and gas production equipment. The current applicable Control Techniques Guidelines established in 1983 by EPA (EPA-450/3-83-007 1983/12 Control of Volatile Organic Compound Equipment Leaks from Natural Gas/Gasoline Processing Plants) has been incorporated into Rule 1173 Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants, and is considered BACT and BARCT for oil and gas production facilities. In addition, equipment-specific standards have been developed over time

[1] "What Constitutes an Adverse Health Effect of Air Pollution?", American Thoracic Society, 1999, http://www.thoracic.org/statements/resources/archive/airpollution1-9.pdf.

[2] "Science of Odor as a Potential Health Issue", Schiffman, 2005.

as technology evolves. Table 1 below summarizes current[3] BACT applicable to the industry.

Table 1. BACT for Fugitive Emission Sources at Natural Gas Plants and Oil and Gas Production Fields and Oil and Gas Production.

Subcategory/Rating/Size	VOC
Compressors, Centrifugal Type	Seal System with a Higher Pressure Barrier Fluid (04-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)
Compressors, Rotary Type	Enclosed Seal System Connected to Closed Vent System (04-10-98); and Compliance with AQMD Rule 1173
Pressure Relief Valves	Connected to Closed Vent System or Equipped with Rupture Disc if Applicable (4-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)
Pumps – In Heavy Liquid Service	Single Mechanical (4-10-1998); and Compliance with AQMD Rule 1173 (12-5-2003)
Pumps – In Light Liquid Service	Sealless Type if Available and Compatible, or Double or Tandem Seals and Vented to Closed Vent System (4-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)
Sampling Connections	Closed-Purge, Closed-Loop, or Closed-Vent System (4-10-98); and Compliance with AQMD Rule 1173 (12-5-2003)
Valves, Fittings, Diaphragms, Hatches, Sight-Glasses, Open-Ended Pipes and Meters in VOC Service	Compliance with AQMD Rule 1173 (12-5-2003)
Combined Tankage	All Tanks Vented to: - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox; (1988)
Wellhead	All Wellheads Vented to : - Vacuum Gas Gathering System; or - Positive Pressure Gas Gathering System; or - Incinerator or Firebox; (10-20-2000)

SCAQMD Authority to Regulate Odors

The District is given broad authority to regulate air pollution from "all sources, other than emissions from motor vehicles." Health and Safety Code (H&SC) §40000. The term "air pollutant" includes odors [H&SC §39013]. Therefore, the District may regulate to control air pollution, including odors, from PAR1148.1 sources. In addition, the District has authority to adopt such rules as may be "necessary and proper" to execute the powers and duties imposed on the District by law. [H&SC §40702]. The District's legal authority to adopt and enforce the amendment to Rule 1148.1, establishing best management practices and requirements to reduce odors from oil and gas production wells also derives from H&SC §41700, which, in pertinent part, prohibits the discharge of air contaminants causing annoyance to the public. It further prohibits the discharge of air contaminants, such as odors, which "endanger the comfort, repose, health, or safety of any of those persons or the public,

[3] Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities, as defined by Rule 1302 – Definitions. http://www.aqmd.gov/docs/default-source/bact/bact-guidelines/part-d---bact-guidelines-for-non-major-polluting-facilities.pdf?sfvrsn=4

or that cause, or have a natural tendency to cause, injury or damage to business or property." [H&SC §41700]. The District's authority granted by H&SC 41700 to protect the public's comfort and health and safety provides for the regulation of facilities in order to prevent the discharge of odors before they cause nuisance or annoyance to the public.

In addition, H&SC §40001(b) authorizes the District to adopt rules and regulations, such as PAR1148.1, and provides, in relevant part, for the prevention and abatement of air pollution episodes which cause discomfort or health risks to a significant number of persons. PAR1148.1 is a reasonable and proper use of the District's regulatory authority.

Affected Industry

Operators of oil wells and well cellars are not required to obtain SCAQMD permits for that equipment and not all oil wells utilize well cellars. Only those facilities with equipment such as API separators, tanks, vessels, heaters, boilers, internal combustion engines and clean-out sumps (part of the dehydration or wastewater system permit unit), and "control" equipment such as heaters, flares, gas treatment equipment, internal combustion engines, microturbines, and boilers would have SCAQMD permits. SCAQMD Rule 222 was amended on March 5, 2004 to include oil production well groups, which is defined as no more than four well pumps located at a facility subject to Rule 1148.1 – Oil and Gas Production Wells at which crude petroleum production and handling are conducted, as defined in the Standard Industrial Classification Manual as Industry No. 1311, Crude Petroleum and Natural Gas.

The number of affected facilities subject to Rule 1148.1, identified through SCAQMD permitting and filing systems, are summarized in Table 2 below:

Table 2. Permitted or Filed SCAQMD Oil and Gas Production Facilities, 2015

Category	Number of Facilities
Oil Wells - Non-RECLAIM	329
Oil Wells - RECLAIM	144
Total	**473**

ODOR MITIGATION WORK PRACTICES AND ASSOCIATED ACTIVITIES

Complaint Handling

SCAQMD currently manages complaints through the 1-800-CUT-SMOG hotline and through implementation of Rule 402 – Nuisance. Rule 402 prohibits any discharge of any material that may cause injury, detriment, nuisance, annoyance or discomfort to any considerable number of persons, with a large number of complaints typically associated with disagreeable odors. Currently, in order to pursue enforcement action

under Rule 402, an odor must be verified at the complainant location, that same odor traced upwind to the source, and the source identified as either the boundary of a facility, or a device, equipment or unit. Once the odor is traced to either a facility or source, the complaint would become confirmed. Finally, multiple confirmed complaints called within the same timeframe would subject the source to a possible issuance of a Notice of Violation (NOV). For more frequent odor NOVs, conditions, through an Order of Abatement, may be issued to address ongoing odor issues emanating from a facility. Additionally, Rule 402 also includes provisions for damage to property.

Figure 2 outlines an overview of the typical complaint handling process, where consideration for NOV issuance is in the six or more confirmed complaint range. Where less than the NOV threshold number of complaints is established, but odors can be traced to an activity or equipment, the inspector would review applicable rules and permit conditions to determine if detected odors are attributable to potential non-compliance. Where a Rule 402 NOV is issued, the source would be subject to a more thorough and lengthy legal investigation and violation settlement.

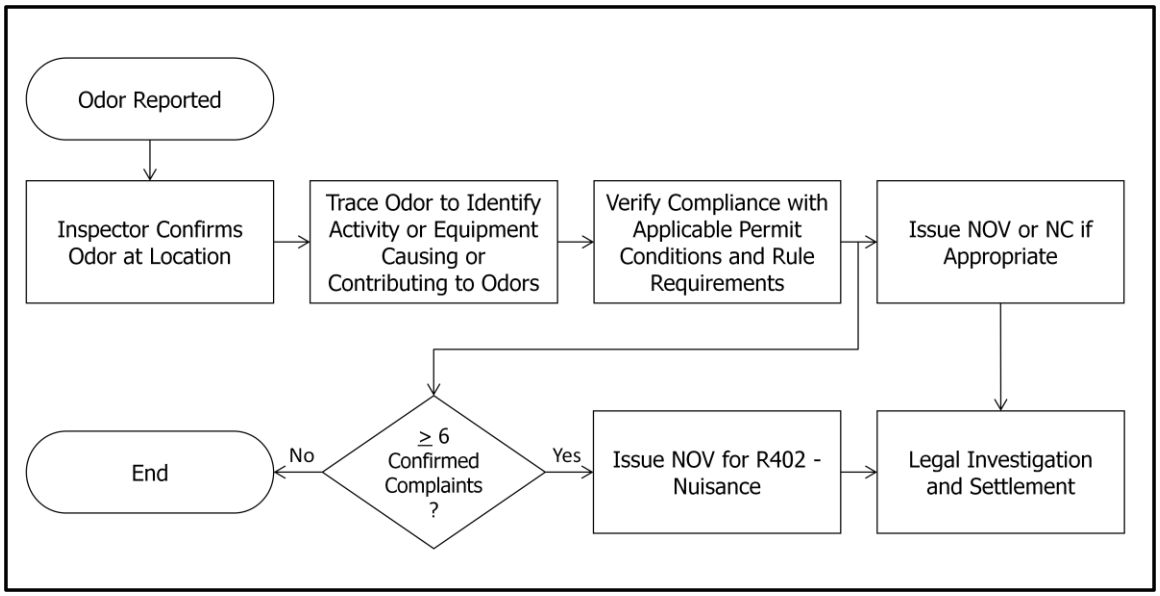


Figure 2. Typical SCAQMD Complaint Handling Process

It is not uncommon for complaints to be unconfirmed or for an odor causing event to fall short of the multiple complaint threshold for issuance of a Rule 402 NOV. Odors may be caused by infrequent or brief activities and are often short-term and fleeting. Pursuant to Rule 402, SCAQMD staff also responds to complaints involving property damage.

Complaint Communication

Although an inspector responding to a complaint typically communicates a summary of the initial field inspection, in some cases the complainant may have chosen to be anonymous, or the complaint call may have occurred off hours or late in the evening.

In other cases, especially when the complaint or facility is not confirmed, the complainant may be left with the impression that no action has been or can be taken to address their complaint. Finally, even when an NOV is issued, the subsequent legal investigation process, as indicated in Figure 2 above, may not address the immediate informational needs of a complainant, who may continue to experience exposure to objectionable odors. A facility that takes specific corrective action to address the complaint driven odor causing activity or operation may not be acknowledged should similar odors be detected from another facility or from a separate odor causing event.

Complaint Data Analysis and Mapping

Staff reviewed complaint data associated with oil and gas production facilities, especially those that may be considered urban wells (i.e., within 1,500 feet of sensitive receptors). Table 3 below summarizes a subset of staff findings. Specifically, staff reviewed 100 out of 403 (roughly 25%) oil and gas production facilities, with only nine facilities identified as having more than one odor complaint, both confirmed and unconfirmed (alleged) over the last 5 years (2010 through 2014).

Table 3. Sample Complaint History, 2010 to 2014, Oil and Gas Production Facilities

Facility Name	Number of Complaints	402 NOVs	203 NOVs	1176 NOVs	1148.1 NOVs
AllenCo Energy INC	258	3	3	4	1
Angus Petroleum	106	0	0	0	0
*Freeport McMoran Oil	14	0	0	2	0
Holly Street Inc	8	0	0	0	0
**Freeport McMoran Oil	7	0	1	2	0
Amtek Construction	3	0	0	0	1
Oxy USA Inc	1	0	0	0	0
Matrix Oil Corp	1	0	0	0	0
Greka Oil & Gas Inc	1	0	2	0	0
Totals:	**399**	**3**	**6**	**8**	**2**

*1371 W. Jefferson Freeport McMoran Oil
** 2126 W. Adams Freeport McMoran Oil

The complainants' locations for the above facilities are displayed in a map, showing distances of 328 feet radius and 1500 feet radius from the center of the facility, representing the existing and proposed distances to sensitive receptors, respectfully. These maps are included as part of Appendix B – Sampling of Complaint History (2010 – 2014) – Oil and Gas Production Facilities of the Draft Staff Report.

SUMMARY OF PROPOSED AMENDMENT

The purpose of Proposed Amended Rule (PAR) 1148.1 – Oil and Gas Production Wells, is to provide enforceable mechanisms to reduce odor nuisance potential and to update the rule to promote clarity, consistency and enforceability.

(a) Purpose

The purpose section of PAR1148.1 includes clarifying references to emission reductions in toxic air contaminants (TAC) and total organic compounds (TOC), concurrent with the VOC emission reductions achieved through the existing rule requirements. In addition, rule language has been inserted to clarify that both operation and maintenance activities of wellheads are part of the purpose, and reference to assisting in reducing regional ozone levels and to preventing public nuisance, is added to reflect the proposed enforceable mechanisms aimed at reducing odor nuisance potential.

(b) Applicability

PAR1148.1 applies to wellheads and well cellars at onshore facilities as well as oil and gas handling operations and maintenance activities where petroleum is produced, gathered, separated, processed and stored. These facilities are also currently subject to other rule requirements, Rule 463 – Organic Liquid Storage, Rule 1176 – VOC Emissions from Wastewater Systems which including sumps and wastewater separator, at oil and gas production wells. Production oil and gas wells are subject to Rule 1173 – Control of Volatile Organic Compounds Leaks and Releases from Component at Petroleum Facilities and Chemical Plants, and the proposed amended rule language is updated to cross-reference these rules.

(c) Definitions

Key definitions are proposed to be added to the definition section to support the additional enforceable mechanisms and also to promote consistency and clarify.

New Definitions Incorporated from Other SCAQMD Rules

Definitions have been incorporated from other rules to ensure consistency. Table 4 below identifies the new PAR1148.1 definitions and the respective rule that have been incorporated into the proposed amended rule:

Table 4. New PAR1148.1 Definitions incorporated from other SCAQMD Rules

PAR1148.1 Section	PAR1148.1 New Definition	SCAQMD Rule Incorporated From
(c)(2)	Component	**Rule 1173** - Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants
(c)(~~5~~6)	Heavy Liquid	
(c)(~~6~~7)	Leak	
(c)(~~7~~8)	Light Liquid	
(c)(~~10~~11)	Organic Liquid	**Rule 463** - Organic Liquid Storage
(c)(~~18~~19)	Volatile Organic Compound	**Rule 102** - Definition of Terms
(c)(~~19~~20)	Wastewater	**Rule 1176** - VOC Emissions from Wastewater Systems

New Definition to Support Investigation Requirement

A definition for Confirmed Oil Deposition Event has been added to support the requirement to investigate the specific cause of an airborne release event that results in property damage as follows:

(c)(4) **Confirmed Oil Deposition Event** *is an occurrence of property damage due to the airborne release of oil or oil mist from an oil and gas production facility, as verified by District personnel.*

New Definitions to Support Odor Mitigation Requirements

Definitions for Confirmed Odor Event, Odor, Specific Cause Analysis and Responsible Party have been added to support the new incremental action levels associated with the proposed amendment's additional requirements to prevent public nuisance associated with odors.

A more detailed discussion of the odor mitigation requirements follows in the requirements section of this report.

(c)(3) **Confirmed Odor Event** *is an occurrence of odor resulting in three or more complaints by different individuals from different addresses, and the source of the odor is verified by District personnel.*

The number of Confirmed Odor Events is the metric used to determine the appropriate action taken by an affected facility in response to odor complaints.

(c)(~~12~~13) **Responsible Party** *is a corporate officer for a corporation and a responsible party for a partnership or sole proprietorship the general partner or proprietor, respectively.*

PAR1148.1 requires certification by the Responsible Party for any submitted Specific Cause Analysis reports.

(c)(~~14~~15) **Specific Cause Analysis** *is a process used by an owner or operator of a facility subject to this rule to investigate the cause of a confirmed odor event or confirmed oil deposition event, identify corrective measures and prevent recurrence of a similar event.*

A Specific Cause Analysis is an important step in mitigating odor or oil deposition issues and will result in requirements for the facility to generate a report summary and propose corrective actions.

Finally, a definition for **Water Injection Well** (c)(20) has been added to PAR1148.1 to improve rule clarity and support the requirements associated with these equipment.

Modified Definitions

The definition for Sensitive Receptor has been updated for consistency with other SCAQMD rules that also refer to sensitive receptors, including Rule 1148.2.

(c)(~~13~~14) **Sensitive Receptor** ~~*is a school (*~~*means any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools;~~ licensed daycare centers;~~ and health care facilities such as hospitals~~ or ~~convalescent home~~retirement*

and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.

Although other SCAQMD rules do not specify that daycare centers be licensed, staff agrees with stakeholder feedback that non-licensed daycare centers would be more difficult for regulated facilities to identify when establishing internal procedures for potentially affected wells, and that non-licensed daycare centers would more than likely be housed in residences, which are already included in the proposed amended definition.

(d) Requirements

PAR1148.1 adds a requirement for pumping out or removing organic liquid accumulated in the well cellar by the end of the day following three complaints in the day as verified by District personnel (d)(3).

PAR1148.1 also adds additional best practice requirements to assist in the identification and prevention of potential odor issues, as well as additional odor mitigation requirements based on exceedances of specified confirmed odor event thresholds (d)(~~6~~7).

In addition to the change in the definition of a Sensitive Receptor noted above, the more stringent requirements applicable to wells located close to a sensitive receptor are proposed to become applicable when the distance is 1,500 feet or less rather than the existing distance requirement of 100 meters (328 feet).

Effective 30 days after adoption, an oil and gas production facility, under the proposed amendment, will be required to utilize a rubber grommet designed for drill piping to remove excess or free flowing fluid from piping that is removed during any maintenance or drill piping replacement activity that involves the use the use of workover rig. (d)(~~10~~11)

Effective 180 days after adoption, the oil and gas production facility, under the proposed amendment, will be required to operate and maintain a monitoring system that will alarm and notify operators at a central location or control center. Oil and gas production facilities generally monitor equipment for safety purposes from a central location, some utilizing control centers that also allow for monitoring and controlling operating parameters to support efficiency or serve as an indicator for leak related emissions. PAR1148.1 requires that such monitoring systems incorporate any emissions monitoring and associated alarm thresholds indentified in any approved SCAQMD operating permit or approved odor mitigation plan. (d)(~~11~~12)

Finally, effective 30 days after adoption, an oil and gas facility, under the proposed amendment, shall post instructions for the public related to odor complaints. The posted instructions shall be provided in a conspicuous manner and under such conditions as to make it likely to be read or seen and understood by an ordinary individual during both normal operating and non-operating hours. The instruction shall include the following minimum information in English and Spanish:

- Name of the faculty;
- Facility call number; and,
- Instructions to call the South Coast Air Quality Management District complaint hotline at the toll free number 1-800-CUT-SMOG or equivalent information approved in writing by the Executive Officer. (d)(~~12~~13)

A sample layout of the instructions is included in Appendix C – PAR 1148.1 (d)(~~12~~13) – Sample Information Signage.

(e) Operator Inspection Requirements

The proposed amendment continues the visual inspection requirement for stuffing boxes or produced gas handling and control equipment, but increases the distance requirement from sensitive receptors from 100 meters (328 feet) to 1,500 feet that changes the weekly inspection requirement to daily as follows:

As conducted by facilities as a general practice already, the operator shall visually inspect:

(e)(1)(C) Any stuffing box or produced gas handling and control equipment located ~~100 meters~~ 1,500 feet or less from a sensitive receptor daily. Receptor distance shall be determined as the distance measured from the stuffing box or produced gas handling and control equipment to the property line of the nearest sensitive receptor.

The proposed amendment requires monthly TOC measurement for any component that has been identified as a potential odor source through a submitted specific cause analysis report. The specific cause analysis report, described in the next section of this staff report, is required of oil and gas production facilities following notification from SCAQMD of a confirmed odor event or confirmed oil deposition event. The additional monthly measurements are required until six consecutive months of measurement do not exceed the applicable leak rate thresholds for the subject component, after which time the underlying Rule 1173 inspection frequencies (typically quarterly) would apply. The leak rate thresholds are 100 ppmv for heavy liquid components and 500 ppmv for light liquid/gas/vapor/components. (e)(5)

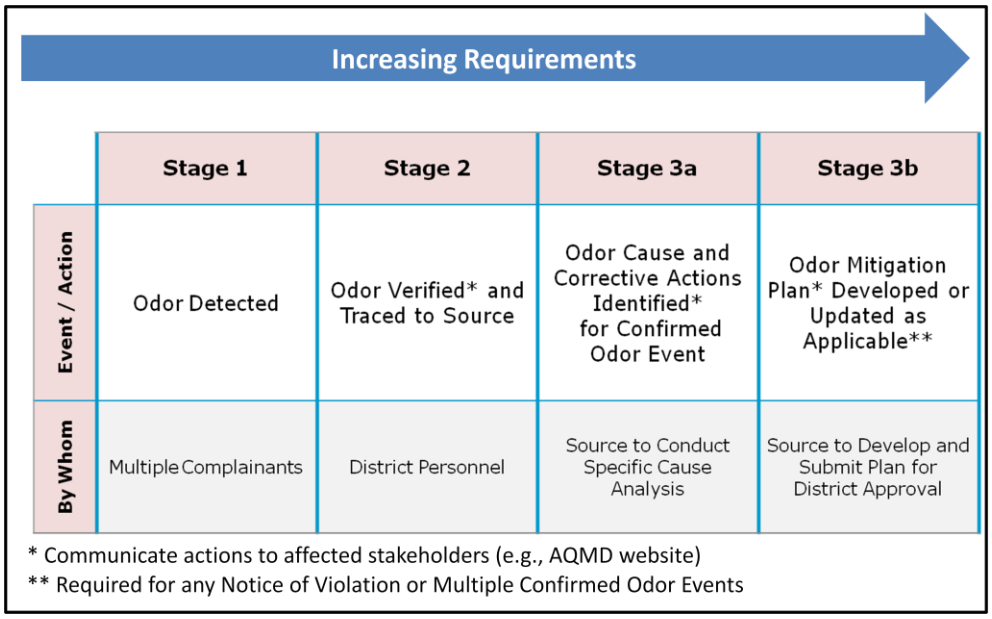
~~(f) Odor~~ Mitigation Requirements

The proposed amendment expands upon the existing SCAQMD complaint handling process described in Figure 2 above, for facilities located within 1,500 feet of a sensitive receptor, by adding two additional action levels based on the number of Confirmed Odor Events as depicted in Table 5 as steps 3a and 3b.

These two proposed additional action levels are intended to provide opportunities to more readily respond to and communicate complainant concerns. As noted previously, under the existing complaint handling process, complainants may not be aware of the progress made towards odor issue resolution. An additional communication mechanism through use of the SCAQMD web page, the creation of the Confirmed Odor Event as a metric, and the proposed requirements for a Specific

Cause Analysis and Odor Mitigation Plan can both serve to demonstrate good faith efforts on the part of the regulated facility as well as close the current communication gap.

Table 5. Proposed Additional Complaint Action Levels for Facilities Located within 1,500 feet of a Sensitive Receptor



(f)~~(1)~~ Specific Cause Analysis

Under the proposed amendment, for facilities located within 1,500 feet of a sensitive receptor, upon determination by an SCAQMD inspector of a Confirmed Odor Event (confirmed odor from three or more independent complainants), a Specific Cause Analysis is required. The affected facility is required to complete and submit a Specific Cause Analysis report within 30 calendar days following receipt of written notification from the Executive Officer. Similarly, a Specific Cause Analysis and report is required following receipt of written notification from the Executive Officer for any Confirmed Oil Deposition Event.

The Specific Cause Analysis includes a brief review of the activities and equipment at the facility identified as contributing or causing the odor or oil deposition in question in order to determine the contributing factors and ultimately the corrective actions associated with the event. In addition, any applicable SCAQMD rule or permit condition shall be identified and reviewed for compliance with the requirements. Furthermore, the Specific Cause Analysis should assess proper implementation of internal procedures or preventative maintenance schedules, and if the procedures should be updated to address any performance gaps or adequate training of operators. The scope of the Specific Cause Analysis is limited to the possible origins and causes of the Confirmed Odor Event or Confirmed Oil Deposition Event, and is a more formal version of the current practice by SCAQMD inspectors when odors or oil deposition are traced back to a specific source.

~~(f)(2)~~(g) Odor Mitigation Plan

Under the proposed amendment, for facilities located within 1,500 feet of a sensitive receptor, upon determination by an SCAQMD inspector of the occurrence of three or more Confirmed Odor Events within a six month period, or the issuance of a single odor related NOV under Rule 402 – Nuisance, an Odor Mitigation Plan will be required. The affected facility is required to complete and submit an Odor Mitigation Plan (OMP) within 90 calendar days following receipt of written notification from the Executive Officer. In addition, for any facility with an existing approved OMP, an update to the plan is required under the proposed amendment following the occurrence of an additional three or more Confirmed Odor Events over a subsequent six month period following the last plan approval, or following the issuance of an odor related NOV under Rule 402 – Nuisance subsequent following the last plan approval. (g)(1)

~~(f)(2)(B)~~(g)(2) Odor Mitigation Plan Elements

An approved OMP must identify all the activities and equipment that may contribute or may have contributed to a confirmed odor event, and the internal procedures and requirements used to manage them. As such, the proposed amendment requires that Odor Mitigation Plans identify oil and gas production and wastewater generation equipment and activities, including both normal and spill or release management control operations, with corresponding identification of potential or actual sources of emissions, odors, frequency of operator inspection and history of leaks. Also the plan is required to identify activity involving drilling, well completion or rework, repair, or maintenance of a well, which notes the sources of emissions and odors, odor mitigation measures, processes for responding to odors and odor complaints, and procedures used for odor or emissions monitoring at the site and fence line. The facility will also be required to identify emission points and emission or leak monitoring used for all wastewater tanks, holding, knockout, and oil/water separation vessels, including any pressure relief devices or vacuum devices attached to the vessels, with provisions for recording of releases from such devices. Finally, any equipment or activity identified as part of any previously submitted Specific Cause Analysis report will also be required.

~~(f)(2)(C)~~ (g)(3) Odor Monitoring and Mitigation Requirements

Because an OMP serves as the collection of best practices applicable to the affected facility, the proposed amendment identifies a list of odor monitoring and mitigation requirements to include within the plan. Table 6 contains a list of these requirements.

Table 6. Proposed Odor Monitoring and Mitigation Requirements

PAR1148.1 Odor Monitoring and Mitigation Requirement	Description
Odor Surveillance	Continual odor surveillance downwind at the perimeter of the property at all times during drilling, well completion, or rework, repair, or maintenance of any well, including water injection wells, recorded hourly. Equivalent odor monitoring equipment may be used in lieu of odor surveillance, subject to approval.
	If odors are detected from odor surveillance or odor monitoring at the perimeter of the facility, all drilling, well completion, or rework, repair, or maintenance of any well will discontinue until the source or cause of odors are determined and mitigated in accordance with measures previously approved.
Well Piping and Rod Management	Any removed drill piping and drill rods shall be managed through written procedures that ensures that potential odor producing emissions are minimized through means such as ~~use of a tarp or similar covering or by~~ storing within an enclosed area, or equivalent.
Tighter Leak Detection and Repair (LDAR)	Reduce the required repair times for components subject to Rule 1173 LDAR to the lowest schedule of one calendar day with an extended repair period of three calendar days (rather than the seven day repair time allowance and seven day extended repair period).
Facility Specific Best Practice	Any corrective action identified in a Specific Cause Analysis report previously submitted by the facility.
Feasibility Assessment	For any odor mitigation or monitoring requirement identified above determined by the facility to not represent an appropriate best practice for inclusion in the OMP, an evaluation and documentation that states the reason why such provision is not feasible to include, subject to approval by the Executive Officer, must be included in the OMP.

The SCAQMD recognizes that all requirements listed in Table 6 may not apply to all facilities or be related to the source of any confirmed odor events or associated notices of violation, and therefore the odor mitiagation plan should indicate why the listed requirement is either not applicable or feasible in the OMP.

The owner and operator of an oil and gas production facility shall comply with all provisions of an approved OMP. Violation of any of the terms of the plan is a violation of this rule.

(~~g~~h) Recordkeeping Requirements

Facility operators are required to maintain records of inspections, repair activities, and the conditions that would require them to pump out their well cellars. Records of data collected must be maintained for a period of three years and a minimum of five years for all Title V facilities. The proposed amendment requires that all records and other applicable documents required as part of an Odor Mitigation Plan also be maintained at the facility or facility headquarters for a period of three years or a

period of five years for a Title V facility and that such records and applicable documents be made available to the Executive Officer upon request.

(~~h~~i) Test Methods

PAR1148.1 includes additional test methods incorporated from Rule 1173 associated with implementation of similar leak detection and repair requirements, and includes test methods for:

- VOC content by ASTM Method D 1945 for gases, SCAQMD Method 304-91 for liquids; percent VOC of a liquid evaporated at 150º C (302º F) shall be determined according to ASTM Method D86. (~~h~~i)(3)
- Flash point of heavy liquids by ASTM Method D93. (~~h~~i)(4)

(~~i~~j) Exemptions

Rule 1148.1 currently provides an exemption for certain activities that may be in conflict with a written company safety manual or policy (~~i~~j)(2). PAR1148.1 updates this exemption by clarifying that oil and gas production facilities must demonstrate that the written company safety manual or policy complies with applicable industry safety standards, in order to provide additional information to determine whether an activity from which the exemption is claimed would have posed a safety concern. (~~i~~j)(2)

Finally, PAR1148.1 includes amended language to improve readability and update rule section numbering.

EMISSION INVENTORY

Staff does not expect any emission reductions or increases because the proposed amendment does not change any VOC standards, and is primarily intended to provide enforceable mechanisms to reduce nuisance odor potential and is otherwise administrative in nature.

COST ANALYSIS AND SOCIOECONOMIC IMPACTS

Introduction

PAR 1148.1 reflects best practices that have been widely implemented in the industry. To ensure continual implementation of these practices, PAR 1148.1 includes additional requirements as part of developed and approved OMP odor mitigation measures. These measures are contingent upon three confirmed odor events at an Oil and Gas Production facility within a six month period or if an Oil and Gas production facility receives a Notice of Violation for a Rule 402 Nuisance violation. If either of these conditions exists, the measures in the first ~~four~~ three rows of Table 7 (shaded rows) could be required either in its entirety, individually, or in a combination depending on site-specific circumstances, and the specific cause of the confirmed odor event or notice of violation that triggered the OMP requirement.

Based on a five year review of historical complaint data, it is expected that potentially a maximum of three facilities would have fallen into this category. The average facility affected would have six affected wells and on average these wells would be maintained or reworked twice each year, with each related activity occurring over 10 to 12 hours per day.

The following represents a conservative cost estimate for the implementation of the odor mitigation measures. In some cases, based on the development through a review of the specific cause analysis or notice of violation investigation, the measures noted below may not be applicable to the affected facility and would not be included as part of a final approved OMP.

Table 7. PAR 11481.1 Potential OMP Improvement Categories.

Enclosure or Equivalent
~~Tarping or Covering~~
Surveillance/Repair/Maintenance
Monitoring Systems
Additional LDAR
Immediate Well Cellar Vacuum Truck
Rubber Grommet

Odor Mitigation Plan Improvement Measures

Enclosure or ~~Tarping~~Equivalent

During repair and maintenance periods, the lift rods are replaced in oil and gas wells. The lift rods are removed and stored vertically and since this is an elevated activity (greater than 40 ft. in height) can result in hydrocarbon vapors that travel offsite if there is sufficient wind. An enclosure structure, used in some oil and gas facilities, could curtail odor complaints by minimizing exposure to cross-winds within these structures. Staff has determined that affected facilities would use an existing structure rather than construct an enclosure around a reworked derrick, especially when there are other options for minimizing expose to cross winds and odors ~~such as plastic tarps~~. Lift connector rods are removed vertically and stored horizontally and could also be ~~covered with plastic tarps or similar coverings~~ stored within an enclosure or equivalent to limit cross-wind exposure and resultant potential odors. The cost of an enclosure structure is estimated to be $20,000 to $50,000. The annualized cost of enclosure for three potentially affected facilities is estimated at between $15,837 and $18,450.

~~It also is assumed that each potentially affected facility would use up to six tarps, twice a year for six wells. The cost of each tarp is estimated at $14.00. The annual cost of this requirement for three affected facilities over five year period is estimated at $600.~~

The proposed amendment allows for an equivalent method for minimizing potential nuisance causing emissions from this maintenance activity and facilities would be responsible for proposing and demonstrating effectiveness as part of the OMP submittal process. Staff expects any proposed equivalent methods to require less capital than the estimated costs for an enclosure structure.

Surveillance During Repairs and Maintenance

The surveillance of the perimeter of an oil and gas production facility during specific repair and maintenance activities can require one or more personnel to traverse the perimeter of a facility during operations and this activity would incur a moderate increase in labor cost. If surveillance personnel detect odors related to the specific repair or maintenance activity, the facility is required to cease operation until the source of the odor is determined and mitigated after which operation is resumed. Based on the May 4th BLS 2014, Occupational Employment Statistics[4], the labor cost for surveillance is estimated to be $25-$30 per hour. Based on discussion with industry, each affected facility would expect to use 20 hours of surveillance for each of the six affected wells per year. The annual cost of surveillance for the three potentially affected facilities over a five-year period is estimated to be $1,980.

Other Odor Mitigation Measures

Additional Leak Detection and Repair (LDAR) inspection would be required when a submitted Specific Cause Analysis report identifies a leaking component as the cause of a Confirmed Odor Event. This requirement would include two additional inspections per quarter (3 monthly inspections each quarter). The cost of each inspection and reports preparation is excepted to be $60.00 per hour. The inspection requires a two-man team on a eight hour shift, most oil field components can be inspection in this period of time. The annual cost for this requirement is $1,152, or less if six consecutive monthly inspections indicate no leaks.

Where the source of the odor is confirmed to be from an oil well cellar the proposed amendment requires immediate (no later than the end of the day) removal of the oil from the cellar. A vacuum truck would be employed for the removal, potentially in addition to the vacuum truck typically employed to remove at the end of the job, which may add an additional day's cost. The average cost for renting a DOT vacuum truck is $1,100 per day and the annual cost for the additional pump out is expected to be $3,300. The administrative cost associated with compliance with this section of the rule is expected to be minimal.

Monitoring Systems and Rubber Grommets

The other two measures are required for all facilities. The facilities are required to operate and maintain a centrally located monitoring/alarm system. Rubber grommets applied to the lift connector rods squeeze excess hydrocarbon liquid from the rods and prevent vapors from becoming air-borne.

[4] http://www.bls.gov/oes/current/oes_ca.htm#47-0000

Facilities currently have basic monitoring system in place to address fire safety and many have more sophisticated systems for process monitoring up to remote process control. The estimated cost to provide additional support for electronic monitoring of additional parameters for any facility that becomes subject to an OMP that would also be required to integrate additional process monitoring would include the additional cost for software, hardware and installation. Software cost can range between $2,000 to $20,000, utilizing either existing facility hardware in the form of a dedicated CPU, keyboard and interface, or an additional dedicated CPU at an additional cost of $1,000, or a rough average per facility cost of $12,000. Alternatively, facilities subject to additional monitoring under an OMP may supplement existing systems through use of VOC monitoring stations. A gas sensor based system (see examples from Appendix A – Monitoring Systems for the Oil and Gas Production Industry), consisting of four detectors routed to a controller is estimated at roughly $2,500 to $2,600 per monitoring point. Using an estimated per facility cost of $12,000 per facility, the annualized cost of additional monitoring that may be required for the three facilities estimated to be subject to OMP over a five-year period is between $3,800 and $4,430.

Under PAR 1148.1, all the identified 470 affected facilities would be required to install rubber grommets to minimize the amount of excess hydrocarbons during rod removal activities. The cost of each rubber grummet is estimated at $10.[5] It is assumed that each affected facility would operate, on average, six wells and would need to replace each rubber grommet twice per year. The annual cost of this requirement is estimated to be $56,400.

Table 8 presents the potential annual cost of PAR 1148.1 by the OMP improvement categories. The total projected annual cost of PAR 1148.1 is estimated to be $~~78,377~~82,470 to $~~81,620~~85,712. The one time capital cost of enclosures and monitoring systems are annualized over ten years with between one to four percent real interest rate.

[5] http://www.delcity.net/store/Rubber-Grommets/

Table 8. Potential Cost of PAR 1148.1 by OMP Improvement Categories.

OMP Improvements	Estimated Unit Cost Per Facility	Total Cost per year for Three Affected Facilities	Total Annual Cost
Enclosure or Equivalent	$50,000	$150,000	** $15,837 to $18,450
Surveillance/Repair/Maintenance	$3,300	$9,900	*$1,980
Monitoring Systems	$12,000	$36,000	** $3,800 to $4,430
Additional LDAR	$1,920	$5,760	*$1,152
Immediate Well Cellar Vacuum Truck	$1,100	$3,300	$3,300
Rubber Grommet	$120	All Facilities	$56,400
Total Annual Cost			**$82,~~469~~470 to $85,712**

*The estimated costs will incur every five years, as such annual cost is one-fifth the total estimated costs
**One-time cost is annualized over ten years with between 1% to 4% real interest rate

It has been a standard socioeconomic practice that, when the annual compliance cost is less than one million current U.S. dollars, the Regional Economic Impact Model (REMI) is not used to simulate jobs and macroeconomic impacts. This is because the impact would most likely be diminutive and would fall within the noise of the model. REMI results constitute a major component of the SCAQMD's socioeconomic analysis. Therefore, when annual compliance cost is less than one million dollars and REMI is not used, the socioeconomic report could be brief and included in the staff report, unless otherwise determined on a case-by-case basis.

INCREMENTAL COST EFFECTIVENESS

Under Health and Safety Code § 40920.6, the SCAQMD is required to perform an incremental cost analysis when adopting a Best Available Retrofit Control Technology (BARCT) rule or feasible measures required by the California Clean Air Act. To perform this analysis, the SCAQMD must (1) identify one or more control options achieving the emission reduction objectives for the proposed rule, (2) determine the cost effectiveness for each option, and (3) calculate the incremental cost effectiveness for each option. To determine incremental costs, the SCAQMD must "calculate the difference in the dollar costs divided by the difference in the emission reduction potentials between each progressively more stringent potential control option as compared to the next less expensive control option." Staff reviewed the current standards throughout the state and determined that PAR1148.1 represents BARCT for the operation of oil and gas production wells because there are no other

more stringent limits available. Although implementation of PAR1148.1 reduces the potential for nuisance odors, it is not anticipated to result in emission reductions and therefore no incremental cost analysis is required under Health and Safety Code § 40920.6.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2 requires a comparative analysis of the proposed rules and all existing federal air pollution control requirements, as well as existing or proposed SCAQMD rules and regulations that apply to the same equipment or source type. There are no federal air pollution control requirements that apply to wells or well cellars. There are currently three SCAQMD rules that regulate the emissions of fugitive VOCs at Oil and Gas Production facilities, one rule that exempts most oil production equipment from permit requirements and one rule that requires filing for oil production equipment that is exempt from permit. In addition, one SCAQMD rule requires notification and reporting for well drilling, well completion, and well reworks activity, and SCAQMD also has a rule to address odors that contribute to public nuisance. Staff has determined that PAR1148.1 does not conflict with the following rules because any similar requirements have been directly incorporated or cross-referenced into the rule language.

Rule 1148 – Thermally Enhanced Oil Recovery Wells

Rule 1148 applies to Thermally Enhanced Oil Recovery Wells and limits VOC emissions to 4.5 pounds per day or less per steam driven well.

Rule 1148.2 – Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers

Rule 1148.2 establishes requirements for owners or operators of onshore oil and gas wells within SCAQMD's jurisdiction to notify the Executive Officer when conducting well drilling, well completion, and well reworking activities that involve production stimulation activities such as hydraulic fracturing, gravel packing and/or acidizing, and also requires emissions and chemical reporting. Rule 1148.2 does not apply to continuous operations at oil and gas well production activities.

Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants

Rule 1173 – Fugitive Emissions of Volatile Organic Compounds applies to oil and gas production fields, natural gas processing plants and pipeline transfer stations and includes requirements aimed at reducing VOC leaks from components such as valves, fittings, pumps, compressors, pressure relief devices, diaphragms, hatches, sight glasses and meters.

Rule 1176 – VOC Emissions from Wastewater Systems

Rule 1176 applies to wastewater systems and associated control equipment located at petroleum refineries, onshore oil production fields, off-shore oil production platforms, chemical plants and industrial facilities. Sumps and wastewater separators are

required to be covered with either a floating cover equipped with seals or a fixed cover, equipped with a closed vent system vented to an Air Pollution Control system.

Currently, under Rule 1176 (i)(5)(H), well cellars used in emergencies at oil production fields are exempt if clean-up procedures are implemented within 24 hours after each emergency occurrence and completed within ten (10) calendar days.

Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II

All wellheads, except for those with steam injection are exempt from written permit requirement per Rule 219 (n)(1) – Natural Gas and Crude Oil Production Equipment.

Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II

Rule 222 requires filing for Oil Production Well Groups, defined by the rule as no more than four well pumps located at a facility subject to Rule 1148.1 – Oil and Gas Production Wells at which crude petroleum production and handling are conducted, as defined in the Standard Industrial Classification Manual as Industry No. 1311, Crude Petroleum and Natural Gas.

Rule 402 – Nuisance

Rule 402 prohibits the discharge of any material that causes injury, annoyance nuisance or damage to property to a considerable number of people. Over the years the development of urban areas placing sensitive receptors closer to established oil field production sites have resulted in an increase in the number of complaints.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA) and the SCAQMD's Certified Regulatory Program (Rule 110), the SCAQMD will prepare appropriate CEQA documentation for the proposed amendments to Rule 1148.1. Upon completion, the CEQA document will be released for public review and comment, and will be available at SCAQMD Headquarters, by calling the SCAQMD Public Information Center at (909) 396-2039, or by accessing SCAQMD's CEQA website at: http://www.AQMD.gov/home/regulations/ceqa.

FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing rules, the SCAQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication and reference, based on relevant information presented at the hearing. The findings are as follows:

Necessity: The SCAQMD Governing Board has determined that a need exists to adopt Proposed Amended Rule 1148.1 to clarify requirements and provide additional

enforceable mechanisms to prevent public nuisance from emissions of volatile organic compounds, toxic air contaminants and total organic compounds.

Authority: The SCAQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from California Health and Safety Code Sections 39002, 40000, 40001, 40702, 40725 through 40728, 41508, and 41700.

Clarity: The SCAQMD Governing Board has determined that Proposed Rule 1148.1, as proposed to be amended, is written or displayed so that its meaning can be easily understood by the persons directly affected by it.

Consistency: The SCAQMD Governing Board has determined that Proposed Rule 1148.1, as proposed to be amended, is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions or state or federal regulations.

Non Duplication: The SCAQMD Governing Board has determined that Proposed Rule 1148.1, as proposed to be amended, does not impose the same requirements as any existing state or federal regulations, and the amendments are necessary and proper to execute the powers and duties granted to, and imposed upon, the SCAQMD.

Reference: The SCAQMD Governing Board by adopting this regulation is implementing, interpreting or making specific the provisions of: Health and Safety Code Sections 40001 (rules to achieve ambient air quality standards), 40440(a), (rules to carry out the Air Quality Management Plan), (b) (Best Available Retrofit Control Technology), and (c) (rules which are also cost-effective and efficient), 40702 (rules to execute duties necessary to preserve original intent of rule) and 40910 et seq., (California Clean Air Act).

COMMENTS AND RESPONSES

Public Comments

A public workshop was held on April 16, 2015 in which approximately 22 people attended. Participants provided comments at the meeting and staff received one written comment. The following section summarizes the comments received as a result of the public workshop, as well as staff's responses.

Written Comment

The following comment letter was received from the Western States Petroleum Association, dated April 24, 2015. The letter has been bracketed for cross-referencing with corresponding responses following each page.

Comment Letter #1

Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Sandra Burkhart
Senior Coastal Coordinator

April 24, 2015

Barry Wallerstein, D.Env.
Executive Officer
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Subject: Draft Amended Rule 1148.1 – Oil and Gas Production Wells

Dear Dr. Wallerstein:

Western States Petroleum Association (WSPA) appreciates the opportunity to submit comments on the draft amendments to Rule 1148.1 – Oil and Gas Production Wells. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and four other western states.

Rule 1148.1 - Oil and Gas Production Wells, was adopted by your Governing Board more than 10 years ago and has had a long history of successful compliance by our industry. In addition to that rule, SCAQMD has numerous other rules that affect this industry as well as dozens of regulations by other environmental regulatory agencies. We take our commitment to providing clean, reliable energy to the residents of California as well as our commitment to the environment and the communities we serve very seriously.

Overall Comments

During the April 14, 2015, working group meeting for this rule amendment, District staff and management indicated that they have not tallied the number of confirmed complaint calls to the agency (if any) about our member companies. As such, it is unclear how it was determined that this amendment is necessary at this time without any data to support it.

1-1

In the absence of any odor data, the SCAQMD seeks to regulate potential odor emissions from oil and gas production wells. This amendment is unnecessary and does not result in any quantified emission reductions. Every industry and facility has the potential to emit odors, yet these amendments target only our industry.

Further, numerous other District, state and federal regulations already exist, the goals of which are to reduce accidental emission releases from oil and gas operations that may lead to odors. The SCAQMD already regulates odors under Rule 402 – Nuisance, so it is unclear as to why another regulation is necessary.

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Response to Comment #1-1

Complaint data has been incorporated into the draft staff report as Appendix B – Sampling of Complaint History (2010 – 2014) – Oil and Gas Production Facilities and shows that some of the oil and gas production facilities have received numerous odor complaints.

SCAQMD Rule 410 – Odors from Transfer Stations and Material Recovery Facilities currently establishes odor management practices and requirements to reduce odors from municipal solid waste transfer stations and material recovery facilities. In addition, Proposed Rule 415 – Odors from Rendering Facilities seeks to establish odor mitigation requirements applicable to Rendering Facilities, and is scheduled for adoption later this year. The proposed amendment to Rule 1148.1 is a continuation of the effort to further minimize the potential for public nuisance due to odors from specific industries. While there are various regulations that address accidental releases or breakdowns, it is not certain that potential nuisance can be solely attributed to upset conditions, or to other non-upset conditions from routine or preventative maintenance activities, or to otherwise compliant but inefficient operational or maintenance practices.

The provisions of the proposed amendment seek to strengthen the preventative measures some facilities may currently be taking and formalizing them in order to improve communication and transparency between the regulated community and their local residential community. As such, staff believes that only facilities with ongoing odor nuisance issues will become subject to the more stringent requirements of the proposed amendment, whereas the community will benefit overall from the increased level of assurance provided from improved communication and improved overall awareness of the operations and practices conducted by the majority within the industry.

Lastly, some VOC and Toxic Air Contaminates (TACs) may be reduced as a result of incorporating additional best practices to reduce odors, but quantification of these benefits is difficult for State Implementation Plan submittals.

Comment Letter #1 (Cont.)

1-1 Cont. This rule not only attempts to solve an odor nuisance problem that does not exist, it has no actual emission reductions.

We were relieved to hear at the April 17th Stationary Source Committee (SSC) meeting that District staff has reversed its prior decision and will now prepare a Socioeconomic Impact Assessment. Page 20 of the staff report states that, "The proposed amendments are administrative in nature and do not have any socioeconomic impacts." Certainly, we do not believe this statement to be accurate and are happy to hear that the cost associated with this amendment will be evaluated.

WSPA assumes that this analysis will include the numerous, very costly new requirements outlined in the proposed amendments, in addition to the new standards for workover rigs that are not even technologically feasible at this time.

The rule requires every company (regardless of whether a single complaint call is levied against them) to install and maintain a "monitoring system that will alarm and notify operators at a central location...and will incorporate any emissions...identified in any approved SCAQMD operating permit." How could installation of such a complex, custom-designed computerized monitoring system be absent any expense? Further, where is the evidence to suggest that such monitoring is necessary when there is no data to support the assumption that this industry presents an odor problem?

1-2 The ban on the use of diesel-fired workover rigs is also the cause of great concern and potentially significant cost. It is WSPA's understanding that non-diesel fired workover rigs do not exist. What would be the cost to custom retrofit a rig with a natural gas engine, as required in section (c)(iii)? Further, WSPA questions the authority of the SCAQMD to regulate mobile sources of equipment that appear to fall under the jurisdiction of the California Air Resources Board. If SCAQMD knows of natural gas-fired workover rigs, these manufacturers' specifications and associated cost should be included in the Staff Report.

Significant additional labor costs would also result from the required change from weekly to daily inspections of all stuffing boxes and produced gas handling equipment within 1,500 feet of a sensitive receptor (rather than the currently required 323 feet). WSPA requests clarification as to the rationale behind the 1,500 foot buffer area and share what other regulations have similar setbacks. This setback is extreme, arbitrary and absent precedent, particularly when imposed upon an industry with no documented history of odor nuisance.

The rule's requirement that operators of oil and gas production wells conduct continuous odor surveillance downwind at the perimeter of each property would be both labor intensive and extremely costly. The existing Rule 1148.1 has recordkeeping and data requirements that industry has satisfied since 2004. Clearly a cost-benefit analysis would find these proposed requirements unsupportable. Based on SCAQMD staff's own assessment, this rule has a negative cost benefit analysis. Further, odor is subjective, with no known monitoring device or measuring stick, so it is unclear what type of surveillance would be successful. This rule amendment results in no benefit at a great cost.

1-3 The staff report does not identify a single facility of the 473 in the Basin for whom odor nuisances have been a problem.

1-4 In addition to the required Socioeconomic Impact Assessment, staff indicated at the SSC meeting that an Environmental Assessment is currently being prepared pursuant to the California Environmental Quality Act (CEQA). While we appreciate the rulemaking being moved from April 2015 to June 2015, we are still unsure how the SCAQMD can complete these reports and meet the state's noticing requirements by the May 1, 2015, Set Hearing Board Package date.

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Response to Comment #1-2

A socioeconomic analysis has been included in the draft staff report, which includes a discussion of centrally located monitoring systems and odor surveillance. Staff notes, as a result of comments received and additional assessment, the use of alternative fueled or electric-powered workover rigs has been removed from the Odor Mitigation Plan requirements in the proposed rule.

It is important to note that staff does not believe that the requirements associated with implementation of an Odor Mitigation Plan and of the proposed amendment will have a significant cost impact to the larger regulated community and that only facilities with ongoing odor nuisance issues will become directly affected. Moreover, the requirements identified in the Odor Mitigation Plan section of the proposed amendment would be applicable to areas within the facility that are identified as potential sources of nuisance odor, or to areas that have become identified as part of a Specific Cause Analysis.

Staff does not expect the daily visual inspection to add significant additional labor costs, considering industry has indicated that it is standard practice to visit each well as part of their daily routines and because the visual inspection is not a labor intensive exercise. Where follow-up repair or maintenance is required following a failed visual inspection, it would be expected that the same frequency of follow-up should occur under the current weekly inspection, unless such equipment fails on a more than weekly frequency, which industry has indicated is not the case.

Response to Comment #1-3

Staff has included a summary of the complaint history data in the Staff Report, as well as a map of the facilities with more than one complaint in Appendix B – Sampling of Complaint History (2010 – 2014) – Oil and Gas Production Facilities.

Response to Comment #1-4

The Draft Environmental Assessment and Notice of Completion were released April 28, 2015 for public review.

Comment Letter #1 (Cont.)

1-4 Cont.

These analyses will help convey to the public the fact that there are no emission reductions associated with implementation of this amended rule. Further, "being able to smell something" does not necessarily correlate with adverse health effects. In fact, numerous studies and the SCAQMD's own ambient monitoring data proves this fact.

1-5

In addition to Rule 1148.1, there are numerous other SCAQMD regulations currently in place which require emission reductions, leak detection and repair, emission control systems and other measures designed to eliminate potential odor impacts from oil and gas operations. They include, but are not limited to:

- ✓ Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring Written Permits Pursuant to Regulation II;
- ✓ Rule 401 – Visible Emissions;
- ✓ Rule 403 – Fugitive Dust;
- ✓ Rule 430 – Breakdown Provisions;
- ✓ Rule 462 –Organic Liquid Loading;
- ✓ Rule 463 – Organic Liquid Storage;
- ✓ Rule 464 – Wastewater Separators;
- ✓ Rule 466.1 – Valves and Flanges;
- ✓ Rule 467 – Pressure Relief Devices;
- ✓ Rule 301 – Fees (Annual Emission Inventory Report);
- ✓ Rule 2004 – Breakdown Provisions for RECLAIM Facilities;
- ✓ Rule 1470 – Internal Combustion Engines, RECLAIM;
- ✓ Rule 1176 – VOC Emissions from Wastewater Systems;
- ✓ Rule 1148 – Thermally Enhanced Oil Recovery Wells;
- ✓ Rule 1149 – Storage Tank Degassing;
- ✓ Rule 1173 – Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants;
- ✓ Rule 1166 – VOC Emissions from Decontamination of Soil;
- ✓ Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities; and
- ✓ Rule 402 – Nuisance.

1-6

Rule 402 – Nuisance, already allows SCAQMD inspectors to issue Notices of Violations (NOVs) after six complaint calls. Monetary penalties must be paid for odor complaints and companies must rectify the situation that caused any odors.

1-7

District Rule 430 – Breakdown Provisions, requires a company to notify the SCAQMD within one hour of discovery that any device is not operating properly and may have resulted in emission leaks. Written documentation must then be submitted which identifies what was broken, how it was fixed and the quantification of any emission leaks. These reports are also used to issue NOVs.

1-8

In addition to air quality regulations, several other environmental agencies regulate oil and gas operations with the goal of maintaining equipment integrity, safety and preventing any negative environmental impacts. Monitoring above and beyond what is already required by the Fire Departments, Consolidated Unified Program Agencies (CUPAs), Occupational Safety and Health Administration (OSHA), and California Department of Gas and Geothermal Resources (DOGGR) are redundant and unnecessary. The SCAQMD should allow those agencies with direct jurisdiction over this industry to continue to monitor and regulate this industry.

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Response to Comment #1-5

Staff agrees and has updated the rule language to indicate that the cross-referenced rules in the Applicability subdivision include the language "includes, but is not limited to:" to address the intent of your comment, considering the variability in the facility operations and other existing rules that may regulate those operations.

Response to Comment #1-6

The current complaint handling process under Rule 402 – Nuisance addresses violations under the approximate six independent verified complainants for a given odor event. The proposed amendment seeks to provide additional enforceable mechanisms to prevent potential nuisance issues from becoming a public nuisance, and to provide additional means to communicate intermediate actions prior to the issuance of a notice of violation and the resultant mitigation in the form of penalties or fees. As such, staff believes the proposed amendment not only provides additional assurances to the local community that intermediate actions are being taken to prevent larger nuisance odor from forming, but also provides a mechanism for the regulated community to share their corrective and preventative measures and best practices without the overhang of enforcement action.

Response to Comment #1-7

As noted, Rule 430 – Breakdown Provisions does not provide relief from Rule 402 – Nuisance. However, not all odor issues are related to breakdown, and the purpose of the proposed amendment is to prevent nuisance, not to respond to nuisance causing conditions.

See also Response to Comment #1-1.

Response to Comment #1-8

Staff agrees that oil and gas production facilities currently operate existing systems to safeguard for fire prevention and emergency response, and considers these systems as centrally located monitoring systems. PAR1148.1 seeks to leverage these systems for those facilities that may become subject to an odor mitigation plan to integrate any identified feasible additional odor or surrogate emissions monitoring equipment as part of the odor mitigation plan implementation.

The proposed amendment does not change the definition of Nuisance. Rather, the proposed amendment creates intermediate enforcement mechanisms short of a notice of violation, and serves the purpose of potentially preventing notices of violation for Nuisance, provided the Specific Cause Analysis is representative and encompasses adequate corrective actions that provide for continual improvement in the facility's overall odor management system and implementation of best practices.

Comment Letter #1 (Cont.)

1-8 Cont. Therefore, these proposed amendments are redundant with current environmental regulations and, as such, unnecessary and excessive. This rule's proposed language would change the definition of Nuisance from six calls per day to requiring a written Specific Cause Analysis Plan after just three odor complaints in any six month period.

1-9 This unfairly singles out a specific industry which does not have a history of legitimate odor complaints. In fact, the SCAQMD's ambient monitoring, conducted for many years at oil and gas fence line locations, confirms no excess emissions. Many of our member companies have never been issued an odor NOV.

Based on our members' experience and recent testimony at the rule making public meeting held in Montebello on March 26, 2015, community activists have indicated that they utilize "phone trees" and that calls are placed to SCAQMD by people who did not actually smell an odor. Asking industry to complete additional reports on the basis of only three calls will be onerous and, again, will not advance the cause of clean air nor will it reduce criteria pollutants in the South Coast Air Basin in any way.

1-10 Further, WSPA members are extremely concerned about the lack of transparency as to how current odor complaints are handled. The SCAQMD's recent refusal to indicate street addresses and/or people's names leads us to conclude that SCAQMD knows in many cases it is the same one or two people calling repeatedly from the same location. A true odor nuisance should result in calls from various nearby addresses. The fact that complaint calls continued to come in to SCAQMD about Allenco long after they voluntarily ceased operations indicates the specious nature of these calls.

There is no scientific basis for this rulemaking and there is ample SCAQMD evidence demonstrating that odor complaints from the oil and gas industry are no greater than those calls received for other industries. SCAQMD's own ambient monitoring data in and around oil and gas production facilities for the past several years indicates emission levels significantly below background levels elsewhere in the South Coast Air Basin. In fact, emissions actually increased (i.e., four minute "spikes") AFTER Allenco suspended operations, according to Mr. Mohsen Nazemi at the Stationary Source Committee Meeting in September, 2014.

1-11 SCAQMD staff indicates that 1080 wells were drilled or "reworked" in the past 18 months in the South Coast Air Basin. Our repeated requests for confirmation that no odor complaints have been associated with these well drilling operations have gone unanswered by District staff.

1-12 Odor monitoring is subjective, burdensome and does nothing to reduce criteria pollutants or toxic air contaminant emissions.

Specific Areas of Concern

1-13
- The Applicability Section (b) notes three of the many air quality regulations required of the industry. As mentioned above, there are numerous District regulations absent from this list.

1-14
- Per (c)(3), any three calls now constitutes a "Confirmed Odor Event." The definition does not provide the time lapse of the three complaints, nor does it specify whether they can be from within the same apartment or housing complex.

1-15
- The rule would require SCAQMD to respond to each and every specific call made by the public in order to document a three-call Confirmed Odor Event. This seems impossible, given limited SCAQMD resources.

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Response to Comment #1-9

For those member companies that have never been issued an odor NOV, or that rarely if ever receives a confirmed complaint, the requirements of the proposed amendment will have minimal impact. However, staff disagrees that previous monitoring work at oil and gas production facilities has failed to confirm excess emissions. For example, data collected as part of the AllenCo investigation routinely showed a spike in emissions, albeit for short periods of time, which has led to multiple nuisance violations.

See also Response to Comment #1-1.

Response to Comment #1-10

The current complaint handling process used by the SCAQMD involves the confirmation by an agency inspector of any odor identified in a complaint. The confirmation includes identification of the odor at the complainant location, traced back to a source. Any use of call trees that do not result in confirmation by the agency inspector would not qualify under definition as a confirmed odor event.

It should be noted that the agency has responsibility for not only reduction in criteria pollutants leading to attainment of the ambient air quality standards, but also is responsible for preventing public nuisance under the Health and Safety Code. Odor issues affecting a single complainant may be better described as a private nuisance and would not be covered by this authorization. The criteria used to establish a public nuisance is a relatively high bar, although the crossover from a potential private to a potential public nuisance is nuanced, and the proposed amendment seeks to improve awareness over the issues involved, the efforts by the regulated industry, and the concerns from the local community.

Finally, although not every complaint call results in a confirmed odor event, the complaint itself can be a community outreach opportunity, either as an indicator of dissatisfaction with perceived responses, actions, or of the desire for more information and awareness of the activities, including frequency and timeframes. In this way, management of potential private nuisance issues can help avoid escalation into a possible public nuisance situation.

See also Response to Comment # 1-9

Response to Comment #1-11

Drilling and rework activities are covered by Rule 1148.2 – Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers rather than Rule 1148.1.

See also Response to Comment #1-3.

Response to Comment #1-12

Odor monitoring is used as part of an odor management system. It is not directly related to criteria or toxic air contaminant emissions, although there may be cross-over. Nuisance is inherently subjective and odor monitoring should be expected to similar.

Response to Comment #1-13

See Response to Comment #1-5.

Response to Comment #1-14

The definition for Confirmed Odor Event refers to "an occurrence of odor resulting in three or more complaints by different individuals from different addresses, and the source of the odor is verified by District personnel." Individuals from different addresses but within the same housing complex would be considered different individuals provided they reside in different addresses. The time lapse of the complaints would be relative to the time required to verify them, and to the extent that the odor resulted from the same occurrence, as determined through investigation by the inspector.

Response to Comment #1-15

The District's goal is to respond to all complaints during normal working hours, and prioritizes complaints during off-hours based on frequency and complaint history. Although it is staff's intention to respond to all complaints, some limitations exist that may prevent immediate response. However, the proposed amendment does not require a response to each and every call, only that any confirmation of an odor that results in three or more independent complaints would qualify as a confirmed odor event and the subsequent requirements that are triggered by that designation. Staff will reassess the effectiveness of this approach on a periodic basis and may determine the need for a confirmed odor event resulting from more or less complaints.

Comment Letter #1 (Cont.)

1-16 • After three complaint calls from anyone over a six month period, a written Specific Cause Analysis is required. If the source of the odor event was confirmed by AQMD personnel, why would the facility need to "investigate the cause of confirmed odor event…."? The cause would have already been determined in order to be confirmed by the SCAQMD. Further, the company would already (as mentioned above) be subject to extensive reporting requirements under Rule 430 – Breakdown Provisions. A Specific Cause Analysis does not lessen the likelihood of an odor incident. Much of this information is already required to be submitted in a 430 Breakdown report.

1-17 • If the definition of Nuisance is to change, then Rule 402 should be amended so that all industries are treated equally. Typically, 6 calls in one day constitutes a Notice of Violation (NOV) under existing Rule 402 – Nuisance.

1-18 • The rule requires every oil and gas company to put signs on exterior fencing, with specific instructions spelling out how to complain to SCAQMD about production facilities and their operators. What other industries are required to do this? Why is this industry being singled out? Why is SCAQMD encouraging calls toward one industry?

1-19 • Section (d)(11) requires each company to install a Continuous Monitoring System and alarm system regardless of whether or not a single complaint call comes in.

1-20 The system must "incorporate any emissions or process monitoring and associated alarm thresholds…"

What type of monitoring is required and what pollutants/levels are to be monitored? Daily and weekly monitoring and data gathering are already required by several other agencies and SCAQMD rules. What are the allowable emission thresholds to which this data should be compared? Who will establish these thresholds?

1-21 • The rule further requires an Odor Mitigation Plan after nine complaint calls. This is in addition to the Specific Cause Analysis. Is such a plan required of any other industry?

1-22 • Continual odor surveillance downwind at the perimeter of the property at all times during well work is required. Observations shall be recorded hourly. If an odor is detected, all drilling work must cease. What specific compounds are to be analyzed? Is the human nose the barometer? If so, odor is again subjective, so it is unclear how one individual would make this determination

1-23 • Further, the Odor Mitigation Plan requirement itself can now result in a Notice of Violation. What constitutes such a violation?

1-24 • If an Odor Mitigation Plan is required, the facility is then banned from using diesel fired workover rigs. To our knowledge, neither electric nor natural gas workover rigs currently exist. Further, these rigs are already regulated as mobile sources by the California Air Resources Board (CARB). WSPA questions the SCAQMD's legal authority to regulate this equipment and is unclear how this rule change will reduce potential odor emissions.

1-25 • This rule arbitrarily changes the set back to sensitive receptors from 323 feet to 1,500 feet. Upon what scientific data or analysis is this change based? This is inconsistent with other SCAQMD regulations which specify permit notification and siting requirements based on shorter distances. Specifically, this proposed change contradicts Rule 1401 Guidance, 1401.1 – Requirements for New and Relocated Facilities Near Schools, Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion

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Response to Comment #1-16

Because not all confirmed odor events are expected to be the result of a breakdown, a facility may not be required to perform an investigation per Rule 430. To the extent that there is overlap, a report under one rule could serve as a report under the other, provided the affected facility indicates that the submitted report is intended to serve multiple purposes.

In addition, confirmation of an odor is not confirmation of the specific cause. Whereas an odor is confirmed and traced to a source from the location of the complainant to a facility boundary, while ruling out other potential sources through consideration of upwind and downwind conditions, a specific cause analysis can point towards a process upset, improper implementation of best practices, or identification of a previously unidentified odor causing condition. A properly conducted Specific Cause Analysis and proper incorporation of corrective actions into a facility's overall management system helps prevent future occurrences, and is a universally accepted quality assurance practice.

Response to Comment #1-17

The proposed amendment to Rule 1148.1 does not change the definition of a public nuisance of the implementation of Rule 402 – Nuisance. However, as staff continues to address and analyze the extent of complaints pertaining to specific industries, staff may consider a similar approach for those industries in the future.

See also Response to Comment #1-6.

Response to Comment #1-18

Rule 461 currently contains signage requirements for complaint reporting through 1-800-CUT-SMOG. Rule 410 – Odors from Transfer Stations and Material Recovery Facilities also contains a signage requirement for complaints and Rule 1420.1 – Emission Standards for Lead and Other Toxic Air Contaminants from Large Lead-Acid Battery Recycling Facilities are also required to post contact information related to complaints. Proposed Rule 415 contains a similar requirement to PAR 1148.1.

The requirement for posting signage for complaints is in response to community requests for such information and facilitates communication, awareness, and most importantly, faster mitigation of the underlying issues. SCAQMD encourages complainants to call in a complaint when nuisance type issues occur, independent of the suspected or confirmed source.

Response to Comment #1-19

The requirement for operation and maintenance of a centrally located monitoring system recognizes the prevalence of existing systems used for purposes other than odor or emissions monitoring that can be used as surrogate monitoring.

See also Response to Comment #1-8.

Response to Comment #1-20

Paragraph (d)(11) requires that any monitoring requirements that are identified as part of an odor mitigation plan be integrated with a centrally located monitoring system. The odor mitigation plan is triggered through multiple confirmed odor events or a notice of violation for Rule 402 – Nuisance, and any activities or equipment that is identified from the specific cause analyses or notice of violation investigation would be reviewed by the facility owner or operator and submitted for review by the SCAQMD to determine if any appropriate and feasible additional monitoring, either emissions or surrogate parameter monitoring is warranted to minimize or respond to nuisance odor causing events.

See also Response to Comment #1-8.

Response to Comment #1-21

The Odor Mitigation Plan requirement is triggered following three confirmed odor events over any six month period, rather than nine complaint calls over an indeterminate period of time or agency confirmation status. Facilities under Rule 410 – Odors from Transfer Stations and Material Recovery Facilities are subject to an Odor Management Plan, which is required of all facilities rather than through use of a confirmed odor event trigger.

Proposed Rule 415 – Odors from Rendering Facilities also contains an Odor Mitigation Plan requirement, based on confirmed odor event trigger.

See also Response to Comment #1-1.

Response to Comment #1-22

The proposed rule language has been revised to more directly link any odor detected as part of the surveillance requirement of (f)(2)~~(C)~~I(ii) to the activities being monitored, including the addition of the following phrase associated with discontinuation of activities:

"…unless the source or cause of the detected odors are determined to not be associated with the activity under surveillance."

Response to Comment #1-23

Similar to the provisions of Rule 221 – Plans, subdivision (e), a violation of any requirement stated within an approved Odor Mitigation Plan would constitute a violation of the proposed amended rule.

Response to Comment #1-24

Due to stakeholder comments and additional staff analysis, the proposed requirement for use of alternative-fuel or electric-powered workover rigs from the Odor Mitigation Plan requirements in the proposed rule.

Response to Comment #1-25

The increased proximity distance to sensitive receptors under the proposed amendment would harmonize the requirement with Rule 1148.2 - Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers.

Complaint history pertaining to a subset of the oil and gas production facilities indicates that the majority of complaints are from locations farther than 100 meters, and also include some locations beyond 1,500 feet. Because nuisance is primarily determined by the receptor, and the incident rate for this source category has been driven by residents due to proximity concerns, staff believes that increasing the sensitive receptor distance as proposed is an appropriate proxy for addressing nuisance potential and nuisance mitigation.

A summary of the complaint information and distances is included as ~~See~~ Appendix B – Sampling of Complaint History (2010 – 2014) – Oil and Gas Production Facilities.

Finally, with respect to Rules 1401, 1401.1, 1470, and 212, the identified setback requirements were not established for the purposes of minimizing public nuisance and the corresponding criteria is not the same as for PAR1148.1.

Comment Letter #1 (Cont.)

1-25 Cont.

and Other Compression Ignition Engines, and 212 – Standards for Approving Permits and Issuing Public Notices, etc. These are regulations pertaining to known air toxics yet they are assigned a smaller set back than potential odor? Each of these rules would also require amendments.

1-26

As the staff report correctly states, Health and Safety Code Section 40727 requires the Governing Board to adopt rules for which the findings of necessity, authority, clarity, consistency, non-duplication and reference can be made. These proposed amendments meet none of these criteria.

1-27

In conclusion, the rule is unnecessary and duplicative of numerous other SCAQMD and state requirements aimed at reducing emissions and potential odors from oil and gas operations. SCAQMD has no legal authority over workover rigs which are already regulated as mobile sources by CARB. Finally, several definitions and the newly established 1,500' setback for sensitive receptors are not consistent with other SCAQMD rules. It is unclear why a rule with no emission reductions and which does nothing to protect public health is necessary at this time.

We urge the SCAQMD to return its focus to the federally-mandated mission of attaining and maintaining ambient air quality standards. These are health-based protective standards. The Rule 1148.1 amendments don't reduce emissions, but they do create a larger, most burdensome set of requirements, one which do not get this Basin one step closer to attainment. WSPA and its member companies appreciate the opportunity to provide comments and look forward to working with the District on this rulemaking.

Sincerely,

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Response to Comment #1-26

The draft staff report identifies the draft findings of necessity, authority, clarity, consistency, non-duplication and reference.

Response to Comment #1-27

See responses to Comments #1-1, #1-2, #1-14, #1-17, #1-24, #1-25, #1-26.

Oral Comments

The following comments were received at the April 16, 2015 public workshop:

Comment #1

More definitions are needed, including for "odor" and various forms of processed gas. Definitions should be included from DOGGR regulations and for internal consistency; the PAR refers to "oil", "crude oil" and "emulsified oil".

Response

Staff has reviewed the proposed amendment and has incorporated a definition of "odor" consistent with the definition included in the currently Proposed Rule 415 – Odors from Rendering Facilities as part of the introduction of the odor mitigation concept. However, staff believes that the current references to oil, crude oil and emulsified oil rely on common terminology and that defining these terms may have an inadvertent limiting effect on compliance determination and action. Similarly, expanding the set of definitions to include the various forms of processed gas and harmonizing current Rule 1148.1 definitions with DOGGR regulations could have a similar limiting effect and thus are not recommended for revision.

Finally, Rule 1148.1 currently applies to oil and gas production wells and the amendment covers oil and gas production facilities, which includes oil and produced gas handling equipment. Natural gas distribution, transmission and associated storage operations are not subject to the current or proposed amended rule.

Comment #2

The proposed amendment should be evaluated as a "good neighbor policy", with consideration for a lower action level threshold for facilities that are in even closer proximity to sensitive receptors that can be located within 20 to 30 feet from the property line. Facilities within 500 feet of a sensitive receptor should have additional requirements. SCAQMD Proposed Rule 415 Odor from Rendering Facilities has more stringent standards and should be adopted under PAR1148.1.

Response

The odor mitigation requirements of PAR1148.1 parallels the structure in Proposed Rule 415 by including odor mitigation requirements such as notification signage for all facilities while also setting additional odor mitigation action levels based on the number of confirmed odor events. Rule 1148.1 currently requires additional inspection and repair actions for wells located within 100 meters of a sensitive receptor while the proposed amendment extends the proximity requirement to 1,500 feet (457 meters), which is more stringent. Furthermore, the proposed amendment harmonizes the sensitive receptor definition from existing Rule 1148.2 – Notification Reporting Requirements for Oil and Gas Wells and

Chemical Suppliers to include residences, which provides additional protections for communities over the current rule, which excludes residences. To the extent that facilities located even closer to sensitive receptors represent a higher nuisance potential, the greater potential should readily translate into more rapid triggering of the odor mitigation action levels. Staff's review of the complaint history [included in Appendix B – Sampling of Complaint History (2010 – 2014) – Oil and Gas Production Facilities] suggests that only a handful of facilities have the potential to trigger the odor mitigation requirements under the proposed amendment and decreasing the proximity requirement would not increase the number of potentially affected facilities.

Comment #3

Affected communities are put in a position where they feel they are trading their health in exchange for philanthropy from operating facilities, because community outreach from facilities tends to reduce complainants but may not reduce exposures to potential nuisance odors or associated health impacts. Facility workers themselves may feel that they are choosing between employment and good health.

Response

Oil and gas production facilities are currently subjected to several SCAQMD rules and regulations, including the various rules identified in comparative analysis section, which cover both criteria pollutant and toxic air contaminant emissions and application of Best Available Control Technology and Best Available Retrofit Control Technology, as well as the protective standards under Regulation ~~I~~ V - Regulation X~~I~~ V - Toxics and Other Non-Criteria Pollutants.

The requirements under Rule 402 – Nuisance serves as both a final regulatory prohibition to protect the public from otherwise *de minimis* emissions that may result in objectionable odors as well as a mechanism for further protecting the public from event driven releases that may be caused by poor implementation of facility emission management programs, including preventative maintenance or possible non-compliance that is not identified as part of the underlying facility monitoring or agency inspection efforts.

Staff's review of the compliance history of these facilities indicates a general high level of compliance – however, staff also believes that the proximity to sensitive receptors does represent a higher nuisance potential. The proposed amendment seeks to acknowledge the higher potential for odor nuisance by adding additional enforcement mechanisms to lower the threshold for potential regulatory action following confirmation of an odor driven event. Similarly, the proposed amendment seeks to acknowledge the general high level of compliance within the industry by setting action levels so that only facilities with recurring odor driven issues are required to implement more rigorous mitigation measures to further protect sensitive receptors from potential exposures and reducing exposures to even lower levels, based on a site-specific evaluation and use of current best practices.

Comment #4

Under the current complaint handling system, inspectors do not visit complainants—I've made several complaints and have never seen an inspector.

Response

The current complaint handling system covers initial inspector response, investigation, and follow-up communications. Following the initial complaint, inspectors, once dispatched, attempt to identify and trace the odor based on the complainant description and knowledge of the area, including nearby operations and activities. Should the odor be identified as part of a general area investigation, the inspector may need to immediately spend time tracing the odor before it dissipates in order to properly identify any potential sources. In addition, during off-hours, evenings and weekends, supervising inspectors prioritize the complaint response based on historical activity and complaint description. In many cases the inspector may be resource constrained and unable to contact the complainant in person, but will instead contact via phone to describe the complaint response, and when available, the resolution of the complaint.

The proposed amendment seeks to provide additional communication mechanisms to keep the complainant and affected local community informed of the status of facilities, with respect to confirmed odor complaints and associated activities in response to any corrective actions. Furthermore, the proposed rule requires posting of signage at the facility that provides contact information for the facility and the SCAQMD complaint process information.

Comment #5

Idled wells should not be exempted under Rule 1148.1.

Response

The current rule provides an exemption for low producing wells that are not located within 100 meters of a sensitive receptor, based on the lower emissions potential. Staff expects the associated odor nuisance potential to be similarly low. Because staff in general believes the odor mitigation plan would be required under the proposal only for those facilities with recurring odor issues and because these issues have not been identified as part of the complaint history for low production wells, the exemption should continue under the proposed amendment.

Comment #6

An oil field modernization project being publically heard in Montebello this month (April 2015) features the relocation of wells towards the periphery of the property, putting them in closer proximity to sensitive receptors.

Response

SCAQMD has reviewed the Draft Environmental Impact Report (EIR) and Recirculated Draft EIR for the Montebello Hills Specific Plan project and provided the following comment letters to the Lead Agency:

http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2008/january/montebello-hills-specific-plan.pdf

http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2009/june/proposed-montebello-hills-specific-plan.pdf

http://www.aqmd.gov/docs/default-source/ceqa/comment-letters/2014/october/deirmontebello.pdf

PAR1148.1 would further strengthen the protections for the community from oil and gas wells.

Comment #7

Under Rule 1148.2, exemptions are available for "emergencies". What constitutes an emergency and when do we find out details?

Response

Rule 1148.2 (d)(3) allows for delayed notification for activities that are necessary to avert a threat to life, health, property or natural resources. Notifications are required no later than 48 hours after the start of operations and the community would then have access to the information through the web portal, similar to other required notifications under Rule 1148.1.

Comment #8

Can the District provide a sample of what the required signage in the proposed amendment might look like?

Response

Staff has added an example of the required signage as Appendix C – PAR1148.1 (d)(12) Sample Information Signage to the Draft Staff Report.

Additional Comments

The following include additional comments that were received as part of the rule development process:

Comment #9

Including Toxic Air Contaminants is not appropriate to the purpose and scope of the proposed amendment. The applicability should be only to hydrogen sulfide and the purpose section further clarified to refer to nuisance odorous compounds.

Response

Although the primary purpose of PAR1148.1 is to reduce VOC emissions from oil and gas production wells, because concurrent reductions of TAC and TOC emissions result from the administrative and engineering controls, and because the rule also includes maintenance activities, it is appropriate to reference all pollutants that are subject to the rule. Furthermore, because any potential odors from the emissions from oil and gas production wells are from the above listed pollutant categories, further including and subsequently defining "nuisance odorous compounds" could have a limiting effect from an enforceability perspective and is not recommended by staff.

Comment #10

The proposed amendment should include cross-referencing to definitions that originated from other SCAQMD rules in order to ensure consistency. Verbatim inclusion in the proposed amendment may cause difficulty should the underlying rule from which the definition was derived become amended at a later date.

Response

PAR 1148.1 includes direct cross-referencing for definitions that have universal applicability, such as the definition for VOC. For other areas, the affected community has requested SCAQMD to include definition language directly in the proposed amendment for clarity especially for individuals that may not have direct access to the internet or the other cross-referenced regulatory language. While it may be difficult to ensure consistency amongst the various SCAQMD rules with respect to common definitions, the independence of the definitions may provide additional flexibility in the development of future source specific requirements. In fact, updating of definitions in the underlying rule may be for a purpose that is more unique to that industrial sector and could potentially create enforceability or compliance related issues to PAR 1148.1 if they were directly cross-referenced or linked in the manner suggested. Staff has reviewed the definitions that were derived from other SCAQMD rules, cross-referencing where appropriate and including full language definitions for clarity elsewhere.

Comment #11

Delete "toxic air contaminants (TAC) emissions" from the Purpose and replace with "Hydrogen Sulfide".

The rule and all of the requirements of the rule are for the control of gaseous organic compounds (TOC) and most volatile compounds of carbon (VOC). These two classifications of gaseous hydrocarbon compounds include the key TAC components found in hydrocarbons (such as Benzene). Almost all of TAC compounds identified by the California Air Resources Board and listed in Section 7412 of Title 42 of the United States Code would not be applicable to oil and gas production wells. Therefore, inclusion of the TAC list is unnecessary and unwarranted as part of this rule.

One of the concerns with inclusion of TACs is diesel particulate matter and other combustion TAC emissions, which are not a compound associated with oil and gas wells, but are associated with mobile equipment that services oil and gas wells. Is it AQMD's intent for the scope of the rule to include diesel electric generators and engines and vehicular traffic even though they are already subject to regulation under CARB? A huge and most likely infeasible burden will be placed on industry and the inspectors to attempt to find the appropriate source of a combustion odor complaint since all LA Basin fields are surrounded by highly traveled busy streets and roads, which far exceed emission levels of temporary and transient oil field sources. It is also important to note the methane and ethane are exempt compounds in AQMD's Rule 102. They are both odorless and have no bearing on the alleged and unjustified odor complaint management being proposed by the Rule amendments.

Response

Although the primary purpose of the rule is to reduce VOC emissions from oil and gas production wells, because concurrent reductions of TAC and TOC emissions result from the administrative and engineering controls, and because the rule also includes maintenance activities, it is appropriate to reference all pollutants that are subject to the rule.

See also Response to Comment #1-24 and Comment 9.

Comment #12

Several definitions have been added to PAR1148.1 that are repeats of definitions in other District rules. Examples include "component", "heavy liquid", "leak", "light liquid" (Rule 1173), and "wastewater" (Rule 1176). In addition to the concern CIPA expressed in its letter of February 13, 2015, regarding the creation of "internally inconsistent language within existing AQMD rules" when one rule overlaps or exceeds the requirements of another rule (e.g., fugitive component repair times in PAR1148.1 vs. Rule 1173), CIPA believes the practice of repeating definitions of the same terms in multiple rules is unwise unless absolutely necessary to tailor the rule to specific circumstances. District staff has acknowledged it is generally not possible to

update multiple rules at the same time in order to ensure consistency. Thus, if a definition were to change in one rule as part of a future rule amendment, but not change in the other rule(s), the result would be inconsistent definitions between rules. This creates confusion not only for the regulated community, but also for the public and District staff as well. This confusion leads to inefficient conversations and increases the potential for misunderstandings and inadvertent non-compliance. A better practice would be to utilize Rule 102 and other rules that provide standard definitions to be referenced in the District's rules and regulations. In addition to the repeat definitions from Rules 1173 and 1176 noted above, PAR1148.1 now includes a definition of "facility" that is slightly different from the definition in Rule 1302. Again, CIPA believes this is unwise and encourages the District to define such common and far-reaching terms in broadly applicable rules that can then, in turn, be referenced in individual source specific rules.

Response

Definitions that have originated from other rules are proposed for incorporation into the proposed amendment in response to general stakeholder comments received that requested that cross-referencing be minimized to facilitate understanding of the requirements for individuals who may not have access to the cross-referenced rules. In addition, cross-referencing definitions may limit flexibility during subsequent rule development efforts for either rule.

See also Response to Comment 10.

Comment #13

Insert language "except where there is an existing AQMD permit for air pollution control equipment" at the end of the first sentence to the provisions for use of a produced gas collection and control system in paragraph (d)(7).

This will allow existing or future AQMD permit conditions to supercede the rule to avoid conflict. Some site specific or various location permits of CIPA member companies require the use of a PID for VOC measurements on portable tanks equipped with permitted vapor control devices (i.e. carbon canisters). However, this Rule provides for using a TVA for TOC measurements. If the language does not change, there will be a conflict to either comply with the Rule or the permit condition.

Response

The current language requires a control efficiency demonstration of 95% or measurement of less than 250 ppmv. Permit conditions may require a different measurement, but would be required to demonstrate compliance with Rule 1148.1 However, for clarity, the proposed amended language has been revised to include the following provision "…or by an equivalent demonstration identified in an approved permit issued on or after March 5, 2004, pursuant to Rule 203 – Permit to Operate."

Comment #14

Remove the changes to “1,500 feet” and maintain the existing rule language of "100 meters".

With the focus of the changes on the urban environment, the existing 100 meter requirement (328') and the change to sensitive receptor definition include and regulate all urban well cellars. There is no scientific evidence to support the increase to 1,500', which appears arbitrarily established. There are unintentional consequences of expanding to 1,500 feet. Large numbers of additional wells in large multi-acre fields would become incorporated into the rule, for which there is absolutely no basis.

Pointing to Rule 1148.2’s setback requirement as justification to change this rule is not an appropriate justification. CIPA pointed out in earlier comments that setback requirements in 1148.2 were inconsistent with 1148.1. CIPA objected to and repeatedly questioned the District’s scientific reason for the distance requirements in the rule without ever receiving any justification. In addition, 1148.2 is a reporting rule which is far different than a compliance rule which will likely add significant costs without any benefit.

The existing Rule 1148.1 has recordkeeping and data requirements that industry has satisfied since 2004 and can show there are no emissions from well cellars. The data clearly does not support the proposed amendments. To the contrary, a CIPA member company has actual air monitoring data collected over the past 4 years which has recorded no TOCs from drilling, completions and workover activities. During the same time, there have been no confirmed odor complaints at this company’s facility in 4 years!

Response

See Response to Comment #1-25.

Comment #15

Concerning odors, monitoring data collected by industry and LA County (February 2015 Air Quality Study conducted at the Inglewood Oil Field) clearly indicate there is no odor issue related to oil and gas production activities. Therefore there is no justification for expending significant sums of money to create a central facility or location that currently does not exist at many facilities. While in theory it sounds like a monitoring system is appropriate, actual monitoring data proves otherwise. There are multitudes of emission thresholds, most of which are not related to odor. It is costly with no meaningful, documented value. This requirement is not feasible and a financial impact study needs to be conducted. Enforcement of existing AQMD rules and regulations is far more effective to ensure “bad actors” comply

Also, concerning safety, existing safety systems are already installed at production facilities. Redundant monitoring required by these rule amendments add no value and are duplicative and unnecessary. Safety systems that are inspected by Fire

Departments include, but are not limited to, LEL monitors; fire eyes (aka flame detection monitoring); and fire pumps and fire systems. In addition, DOGGR conducts environmental inspections, which include environmental, spill and fire equipment inspections. LA Fire Health Hazardous Materials Division conducts environmental inspections to include safety and environmental concerns as well as proper storage of hazardous materials.

Response

See Response to Comment #1-8.

Comment #16

The Operator Inspection Requirements are too stringent. The frequencies should be changed by making all daily and weekly requirements quarterly, consistent with the frequency required for well cellar inspections. In addition, the proximity to sensitive receptor condition should remain at 100 meters rather than 1,500 feet.

The existing Rule 1148.1 has recordkeeping and data requirements that industry has satisfied since 2004. The data clearly does not support the proposed amendments.

Additionally, a CIPA member company has actual air monitoring data collected over the past 4 years which has recorded no TOCs from drilling, completions and workover activities. There have been no confirmed odor complaints in the same 4 year period!

Response

The visual inspection frequencies in the current rule reflect baseline expectations and it is staff's understanding that it is industry practice to physically inspect each well on a similar frequency independent of this existing requirement. In the absence of this inspection, outside of standard industry practice implementation, an unattended well and accompanying well cellar could pose an increased potential for nuisance and emission generation up to a three month period, in addition to any potential for operational or production issues. The noted absence of confirmed odor complaints at a presumed compliant facility may be *prima facie* evidence of the effectiveness of this visual inspection requirement, although use of ambient monitoring by the facility described may also represent a best practice consideration.

Comment #17

In the first sentence of the odor mitigation requirements section, delete the change to "1,500 feet" and make it "100 meters". Also, insert language "as far as it applies to the actual confirmed odor complaint event" at the end of the sentence associated with specific cause analysis to ensure the Odor Mitigation Requirements address the specific odor that is the subject of the complaint events.

Response

The proposed amended language has been revised to refer to "confirmed odor event" rather than "odor" with respect to Specific Cause Analysis and related reports.

However, the odor mitigation plan requires facilities to comprehensively review their operations to identify all sources of potential odor and related emission sources as well as the management systems used to minimize nuisance odor potential. As such, the odor mitigation plan is not limited to the specific cause analysis or NOV that triggered the requirement to develop the odor mitigation plan.

See also Response to Comment #14.

Comment #18

Increase the Notice of Violation (NOV) trigger from one (1) to two (2) in a 12 month period of time for Odor Mitigation Plan and Mitigation Requirements.

This is important since each confirmed odor complaint event has the potential to become an NOV by the activists using their call trees. Industry has experience and evidence from AQMD incident reports that show the activist standing outside a facility soliciting passers bys to call in to increase complaint numbers. A single event should not increase compliance requirements on a company without the opportunity for the company to address and fix. One NOV does not necessarily mean there will be a repeat of the event. It should not be a "one strike you're out" trigger.

Response

Currently, receipt of a Rule 402 NOV results in an investigation and assessment of appropriate corrective actions, including potential modifications to operating permits and permit conditions. The role of the Odor Mitigation Plan is to serve as a formal corrective action to address nuisance, for those facilities that have been identified from the complaint process as having the potential for creating a nuisance.

A facility that has received a notice of violation for Rule 402 is understood to have met the standard for having the potential to create a nuisance. Following issuance of an NOV, the facility would have all the rights and remedies available to any facility that has been issued an NOV, including defending against the District's enforcement action in court. The facility can also go to the Hearing Board and seek a Variance and could dispute the violation, although the Hearing Board would typically rely on the District's findings and make a determination of whether a Variance is warranted and, if so, the terms for reaching compliance.

Comment #19

The Odor Mitigation Plan should be specific to the actual triggering confirmed odor complaint event, and the rule language should reflect this.

Also, all references to providing leak history and records of releases from any pressure relief devices or vacuum devices attached to vessels should be removed from the proposed amendment because the data is already submitted to the AQMD on a quarterly basis and should be on file.

Response

The odor mitigation plan requires facilities to comprehensively review their operations to identify all sources of potential odor and related emission sources as well as the management systems used to minimize nuisance odor potential. As such, the odor mitigation plan is not limited to the specific cause analysis or NOV that triggered the requirement to develop the odor mitigation plan.

The proposed amendment does not require re-submittal of leak history. It does require facilities to consider leak history in identifying potential sources of odors and associated emissions.

Comment #20

Remove "continual" and "at all times" with respect to the required odor survellience during well workover activities.

This requirement to conduct continuous odor surveillance downwind at the perimeter of the property would be labor intensive for operators that do not have existing systems for odor surveillance. The existing Rule 1148.1 has recordkeeping and data requirements that industry has satisfied since 2004. The data clearly doesn't support the proposed amendments. Clearly a cost-benefit analysis would find this requirement unsupportable.

Response

The proposed requirement is for continual surveillance rather than continuous, with recordings at a minimum hour frequency. As part of the development of an odor mitigation plan, a facility would identify all potential sources of odor and related emissions and the feasible management practices used to minimize nuisance potential. Any benefit analysis conducted by the facility in support of a best practice will be considered by the District should an odor mitigation plan be required.

Comment #21

The requirement to discontinue certain well workover activities due to odor surveillance should contain language as follows: … perimeter of the facility"and the

odor is confirmed from" drilling, well completion…. …will discontinue "when the operation is safe to do so" and until the source or cause….

It is infeasible to discontinue operations mid-operation. This is not always feasible due to safety considerations of the well. To stop mid-operation could potentially leave a wellbore uncontrolled and endanger the safety of personnel and the environment. This is an extreme measure for a very expensive operation to shut down before an investigation is even conducted. The odor may not even be coming from these operations.

Response

The proposed amendment language has been revised to directly cross-reference the exemption currently provided in Rule 1148.1 to address safety considerations.

Comment #22

Remove the requirement for electric or alternative fueled workover rigs.

The provisions that require only electric powered or natural gas-, propane-, or butane-fired portable workover rigs is technically infeasible since there are no such rigs available in the United States. At any one time there could be up to 40 portable workover rigs operating in the LA Basin at one time. Even if gas rigs were available, the gas (propane, butane, CNG or LNG) would need storage onsite in large, portable, pressurized tanks. A diesel tractor trailer would be required to pull the tank from location to location for filling. This is both a safety concern as well as a space constraint on location with this type of rig. If the thought is to push electric and/or gas rigs because they are cleaner, as a comparison, a Cummins diesel 14.9 liter, 500 H.P. on road engine, Tier 4 final is certified at .18 ppm NOx (Tier 4 standard is .2 ppm). The PM is certified at .0000 ppm (Tier 4 standard is .01 ppm). So the Tier 4 final certified engines are extremely clean. If this provision is adopted and if the triggers of the provision were met, an operator would not be able to attain/operate such a rig, and thus, be unable to perform necessary well work as required by the DOGGR. The resulting effect is a taking of the operator's rights.

Response

See Response to Comment #1-24.

Comment #23

Remove the requirement to "store any removed drill piping and drill rods in a manner that minimizes emissions from crosswinds through the use of either a tarp or similar covering or by storing within an enclosed area"

The requirement is not feasible. If required, the volume of tarp or plastic sheeting that would be required (since you could not re-use) would create more vehicular criteria pollutant emissions during its transportation and disposal than would ever be emitted

from the drill pipe itself. As noted previously, four years of data collected by one company registered no odor or emission issues from these activities.

Response

The proposed amendment requires that facilities review the current feasibility of such measures as part of any required odor mitigation plan. Any benefit analysis conducted by the facility in support of an alternative best practice will be considered by the District should an odor mitigation plan be required. In addition, the proposed amended rule language and staff report have been revised to remove reference to the terms "tarping" and "covering".

Comment #24

Delete the changes that require more stringent LDAR. See comment 16 above regarding operator's data (air monitoring data for past 4 years and 1148.1 data for past 10 years) supporting no evidence which justifies the reduction in repair time under Rule 1173. The proposed changes create internally inconsistent language within existing AQMD rules and make it more burdensome for operators to comply.

The changes add confusion to Rule 1173. When would rule 1173 not be applicable? How would a leak be identified and quantified if not per Rule 1173 Inspection and Maintenance (I&M) Program? Using the District approved "CAPCOA-REVISED 1995 EPA CORRELATION EQUATIONS AND FACTORS" for calculation of fugitive emissions from equipment leaks, the total hydrocarbon (THC) emissions from a valve leaking at an EPA Method 21 screening value of 250 ppmv is calculated to be less than 1/1,000th of one pound per day. Furthermore, using a typical speciation profile for produced gas from a well in the South Coast Basin, the benzene associated with such a leak is calculated to be approximately 1/1,000,000th of one pound per day. Do these levels of emissions justify even the current required component repair times, let alone the proposed more stringent ones?

Response

The proposed language clearly identifies consideration of a shorter repair time than currently required under Rule 1173 for facilities that are subject to an odor mitigation plan and where an odor nuisance potential has been identified through a specific cause analysis or by the facility during the development of the odor mitigation plan. Because a facility will be identifying this measure as part of an odor mitigation plan that is submitted to the SCAQMD for approval, there would be no confusion with respect to the applicability of either rule or the odor mitigation plan.

Comment #25

The feasibility determination in the Odor Migtigation Plan should include the following language …..is not feasible to include "or is not related to the confirmed odor complaint events(s) at the facility" subject to approval…." to ensure the Odor

Monitoring and Mitigation Requirements address the specific odor that is the subject of the complaint event(s).

Response

The odor mitigation plan is intended to support a facility's overall odor management system. As such, it is a comprehensive evaluation of a facility's operation, including operational procedures and odor management procedures, which are not limited to the specific cause analysis or notice of violation that may have triggered the requirement for the plan.

Comment #26

The Test Methods section should include the following language: …...Method 21 using an appropriate analyzer calibrated with methane "or any other method demonstrated by the applicant to be equivalent and approved in writing." The analyzer…….. Reinstate original "(h)(4) Equipment Test Methods", which is shown as a strike through in this version of the rule.

The change could allow the use of a PID, which is the preferred and most cost effective measurement device in many instances. TVA's measure specifically TOC's and PID's measure specifically VOC's. TVA's are calibrated with methane and PID's are calibrated with hexane. Cost of a TVA is $17,000 and cost of a PID is $3,000. A TVA has an ignition source with a flame. Since well cellars are class 1 division 2 according to American Petroleum Institute Recommended Practice 500B, which means non-explosion proof equipment, is not allowed in the area without monitoring equipment and a hot work permit, the PID is the preferred measurement device. The PID is explosion proof and the TVA is not. Additionally, the goal of 1173 and 1176 is to control VOC's. Perhaps there could be an adjustment to the limit of 250 ppm TOC's to an appropriate VOC ppm limit.

Response

The provisions for the use of alternative test methods have not been deleted in the proposed amendment. Rather, the language has been relocated to the beginning of subdivision (h) with the same applicability as the current rule, including allowing a facility to use a PID for monitoring purposes where approved.

Comment #27

The written request and justification for development of a company safety manual that is to be submitted to the Executive Officer, needs to have a defined timeline for approval by the District. It is recommended that a 30-day approval process be defined in the Rule for whether the justification meets the criteria for this exemption.

A time line needs to be added so as not to impede the activities of the operator being requested for exemption. An additional proposal would be to discuss a CIPA member

submittal for an industry-wide justification since the safety considerations would be industry-wide in nature.

Response

The submittal language was removed from the prior iteration of the proposed amended rule. The demonstration would be required as part of use of the proposed exemption in the event any compliance related SCAQMD investigation.

Comment #28

Remove the changes to "1,500 feet" and maintain existing rule language of "100 meters" associated with the exemption provided for low producing wells.

Response

The proposed language has been revised to continue the exemption for low producing wells located outside of 100 meters of a sensitive receptor.

Comment #29

Change the rule to require an Odor Mitigation Plan for every facility upon rule adoption—do not require waiting until after odor complaints occur.

Response

See Response to Comment #2.

Comment #30

AQMD should commit to providing an evaluation of onsite monitoring and monitoring options for the community. Monitoring alarms and systems should be outlined in the rule.

Response

SCAQMD is currently reviewing emerging monitoring technologies with particular emphasis on lower cost fence-line monitoring capabilities to supplement existing inventory efforts. Oil and Gas Production Facilities are part of this ongoing effort. Additional descriptions of the systems and capabilities under review are included in Appendix A – Monitoring Systems for the Oil and Gas Production Industry to the staff report.

Comment #31

AQMD should provide the public with an evaluation of Best Available Retrofit Control Technology (BARCT) for all existing oil drilling and Best Available Control Technology (BACT) for new, modified and expanded operations, including best available equipment, inspection techniques, and best practices.

Response

A brief discussion on BACT and BARCT has been included in the Draft Staff Report.

See also Response to Comment #3.

Comment #32

The proposed amendment should also include monitoring and mitigation plans to prevent oil spraying of houses and vehicles during initial and ongoing operations.

Response

The incident noted ~~should be~~ is typically handled under Rule 402 - Nuisance. PAR1148.1 is intended to bridge the gap for odors in part because of the concurrent VOC emission reduction potential. Oil deposition should be handled on a case-by-case basis~~. Until the case noted has been addressed, it is unclear what universal standards would be applicable to all facilities.~~ and as such, the proposed amendment has been revised to incorporate the requirements of a Specific Cause Analysis for any Confirmed Oil Deposition Event, which has been defined as an occurrence of property damage due to the airborne release of oil or oil mist from an oil and gas production facility, as verified by District personnel.

Comment #33

A hazardous risk analysis should be performed for any facilities using or storing hydrogen fluoride

Response

Well acidization activities, including use of hydrogen fluoride, is not covered by Rule 1148.1, but these activities are included as part of Rule 1148.2 – Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers implementation. Any additional requirements associated with well stimulation based on the data obtained under Rule 1148.2 would be addressed in a subsequent rule development effort.

Comment #34

Diesel truck emissions and other diesel engine emissions as well as analysis of benzene, toluene, ethyl benzene and xylene (BTEX) compounds should be part of the proposed amendment for facilities located within 1,500 feet of a sensitive receptor.

Response

These activities are currently subject to Rules 1401, 1402, 1470, and the AB2588 program and annual emission reporting programs, and are regulated in various ways and by various agencies.

Comment #35

The proposed amendment should require that all information be made publicly available to provide opportunity for public comments and be responsive to these comments. More transparency is needed for all new and existing drilling operations to provide all of the plans and reports including all specific cause analysis reports, and all odor mitigation plans.

Response

The requirements for managing information associated with confirmed odor events will be addressed through implementation of the Board Resolution item included with the Final Hearing Package. This may include, but are not limited to, a specific SCAQMD website that could list confirmed odor events and specific cause analysis reports submitted by facilities.

Comment #36

The odor mitigation plan should be updated to address any reported odors that occur whether confirmed or unconfirmed

Response

There would be little legal standing to enforce an unconfirmed odor complaint. However, facilities are free to voluntarily conduct an internal investigation and work directly with complainants on any unconfirmed complaints. Staff believes that the required signage under the proposed amended rule may also encourage the complainants to contact the facility first to accelerate corrective actions.

Comment #37

Require operators to update standard operating procedures (SOP) under subparagraph (f)(2)(C) and other work practice plans should be required to prevent future re-occurrences of odors.

Response

The provisions of this section of the proposed amendment have been strengthened to require facilities to document the rationale for not including specific considerations.

Comment #38

Require records to be maintained for 10 years.

Response

Current record retention under Rule 1148.1 is a three-year retention, with a five year retention for major sources subject to Title V of the federal Clean Air Act. In general, the record retention requirements are established based on the

compliance schedule for any applicable regulatory requirement. In many cases, an annual requirement would b accompanied by a two-year retention to ensure that regulated facilities are capable of demonstrating compliance through the next compliance milestone. Permit applications are generally required for the life of the permitted equipment to ensure adherence to the facility representation of the equipment potential to emit. Staff does not believe that a 10-year universal record retention is accompanied by an applicable regulatory milestone, and therefore does not recommend extending the current retention requirements.

Comment #39

Require at a minimum the same level of leak detection and repair that is mandated for oil refineries including frequent inspections. Furthermore, the proposed amendment should not allow standing oil in well cellars.

Response

Oil and Gas Production Facilities are currently subject to Rule 1173. Additional leak detection and repair is part of the current Rule 1148.1. The proposed amendment further increases the stringency of this requirement by tightening the leak repair time for facilities subject to an odor mitigation plan, and also requires accelerated clean-up of wells that exceed 250 ppmv and that are located within 1,500 feet of a sensitive receptor, which is more stringent than the existing requirement that applies to wells located within 100 meters (328 feet) of a sensitive receptor.

In addition, the proposed amended rule language has been updated to require monthly inspections for any component identified as an odor source as part of a specific cause analysis until six consecutive months where the measurement does not exceed the regulatory leak thresholds.

Finally, the proposed amended rule language has been revised to include a requirement to pump out or remove organic liquid that has accumulated in the well cellar by the end of the day following three complaints in a single day as verified by District personnel.

Comment #40

Improve fugitive emission control beyond simple tarps requiring more protective fugitive emission control to protect against evaporation. Nonetheless, the proposed rule incorporates additional best practices, such as the use of a grommet, to further minimize odors associated with oil and gas production facilities.

Response

The proposed use of a covering or tarps ~~is~~ was for a specific activity and intended to minimize odors. Oil and Gas Production Facilities are currently subject to various fugitive emission control requirements, including Rules 461, 1173, 1176,

and the existing elements in Rule 1148.1. Nevertheless, reference to the use of tarps or coverings has been removed from the proposed amended rule language and staff report.

Comment #41

Minimize on-site combustion as much as possible in concert with eliminating fugitive leaks and venting of gases

Response

Combustion emissions are subject to current permitting and BACT requirements. The trend toward the use of micro turbines over flaring balances the overall environmental impacts.

Other Comments

In addition to the above comments, staff has received and reviewed numerous comments identifying typographical and grammatical errors, as well as cross-referencing updates. Staff appreciates the input and has updated the proposed rule language as appropriate.

REFERENCES

1. SCAQMD, Final Staff Report for Proposed Rule 1148.1 – Oil and Gas Production Wells, Proposed Amended Rule 222 – Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II, 2004.

APPENDIX A. MONITORING SYSTEMS FOR THE OIL AND GAS PRODUCTION INDUSTRY

SAMPLING AND MONITORING APPROACHES

SCAQMD uses a variety of sampling and monitoring approaches, including use of canisters to measure hydrocarbons, handheld devices to screen for particulate matter (PM) and hydrogen sulfide (H_2S), as well as traditional fluid sampling and laboratory analysis for liquids and liquid constituents, to measure both upwind and downwind from a potential source to determine its contribution.

Summa Canisters

Evacuated containers are used to collect organics air samples. These canisters are thermally treated containers under a vacuum, and air sample are collected by opening a valve that is later closed after a pre-designated time period. SCAQMD uses Summa canisters, which stainless steel evacuated containers that have been electropolished on the interior to enrich the nickel and chromium surface and makes it more inert than untreated stainless steel.

Tedlar Bag Sampling

Tedlar bags are a simple and effective means of collecting gaseous samples when the target pollutant concentration is relatively high, about 10 ppmv. They can be used with or without a Teflon sampling probe. They are often used with evacuated sampling cases, however care is taken to keep the sample out of the sunlight to avoid sample degradation.

Handheld Devices

SCAQMD makes use of handheld detectors to screen low level concentrations of hydrogen sulfide (Jerome® Monitor) and particulate matter (DustTrak™).

Sampling

Small vials and jars are used to collect field fluid samples for follow-up analysis in the laboratory to determine organic content.

PAR 1148.1 MONITORING

Currently, oil and gas production facilities rely on a variety of monitoring systems, techniques and equipment to ensure operationally efficiency and safety, especially with respect to fire prevention. Some larger facilities may use more advanced systems that not only monitor process parameters such as temperature, pressure and tank levels, but also employ motor controlled valves to remotely manage some parts of the operation.

The proposed amended rule seeks to build upon the existing systems used to monitor safety and operational parameters because many of these parameters can serve as surrogates for potential emissions and accompanying potential odor events. Current operational parameter monitoring in oil and gas production facilities can range from traditional analog technology to high tech video monitoring with pneumatic valve operation and alerting software that provides real-time access through a smartphone or through a centralized operation center or control center. Most facilities are in between these two examples while transitioning from older control boards to the newer generation as facility equipment turns over, is expanded or upgraded. Where identified through a developed and approved Odor Mitigation Plan, the

proposed amendment would focus on integrating feasible and effective measures. The proposed amended rule would focus on monitoring alarm and notification systems.

FIXED GAS DETECTION APPLICATIONS

In the oil, gas, petrochemical refinery and chemical industry, a variety of fixed gas detection methods currently utilized primarily for safety and hazardous environment monitoring. These include:

- Ultraviolet (UV) and Infrared (IR) radiation of hydrocarbon-based fires
- Open Path Infrared (OPIR) for long-range hydrocarbon detection
- Non-dispersive infrared sensor (NDIR) and point IR for toxic and combustible gas monitoring
- Electrochemical (E-chem) toxic gas leak detection, oxygen within confined spaces
- E-chem for oxygen deficiency for confined space entry
- Catalytic bead and NDIR for combustible gas detection

REMOTE SENSING TECHNOLOGY FOR FUGITIVE EMISSIONS

Recent advancements in optical remote sensing technology have made it possible to measure and quantify fugitive VOC emissions from an entire facility or from an operational process unit. This is made possible by mobilizing a Differential Optical Absorption Spectroscopy (DOAS) and Solar Occultation Flux (SOF), and traversing along the fence line of the facility. The data obtained from the analyzer can be graphically displayed with proprietary software.

In September 2013, the SCAQMD Board authorized to contract with FluxSense AB of Sweden for a pilot study to monitor and quantify fugitive VOC emissions from the Tesoro Refinery in Wilmington, CA. The monitoring approach proposed by FluxSense AB included the deployment of SOF and mobile DOAS technologies for monitoring and quantifying emissions including VOC's and other traces gases (e.g. SO_2 and NO_2). SCAQMD continues to review opportunities to utilize this emerging technology as an additional tool for assessing fugitive emission sources and fugitive emission sources.

AIR QUALITY SENSOR PERFORMANCE EVALUATION CENTER (AQ-SPEC)

SCAQMD's Board approved $852,000 in July 2014 to fund the creation and first year of operation of the Air Quality Sensor Performance Evaluation Center (AQ-SPEC), which will be located at SCAQMD headquarters in Diamond Bar. The agency also will pursue funding opportunities to sustain the center in future years. This center, representing the nation's first comprehensive evaluation center, will test commercially available, low-cost air quality sensors.

The availability of such sensors, many of which can be purchased on the Internet for a few hundred dollars or less, is rapidly proliferating and many residents and community groups are

now using them to measure pollution levels in their neighborhoods. Data from the devices can be "crowd-sourced" in real time to Internet sites. However, there are no performance standards or testing centers to validate the accuracy of the devices, and preliminary tests have indicated that many of them are not reliable, perform poorly in the field and produce measurements that have little or no correlation to scientifically validated air quality data.

SCAQMD plans to acquire the air quality sensors and begin field and laboratory testing of them this fall. A dedicated website is expected to be launched in the near future and will include testing results and some guidelines and considerations for use of the new technology.

In the field, the sensors will be tested alongside one or more of SCAQMD's existing air monitoring stations using federally approved methods to gauge overall performance. Sensors demonstrating acceptable performance in the field will then be brought to the AQ-SPEC for more detailed testing.

SCAQMD also will encourage other air quality agencies, universities and national labs to submit any test data and reports they have to help expand the knowledge of available air quality sensors and their performance.

Low-cost air quality sensors have many potential uses from research to personal exposure monitoring to providing education, information and awareness about air quality levels and exposure. Poor or improper data obtained from unreliable sensors could lead to confusion and also jeopardize the successful development, deployment and use of the technology. SCAQMD's AQ-SPEC program is designed to help provide much-needed information about this emerging technology.

Field Testing

Air quality sensors will be operated side-by-side with more "standardized" air monitoring equipment such as Federal Reference Methods and Federal Equivalent Methods (FRM and FEM, respectively), which are routinely used to measure the ambient concentration of gaseous or particle pollutants for regulatory purposes. The testing will be conducted at one or more of SCAQMD's existing air monitoring stations (e.g., Rubidoux air monitoring station in Riverside, CA, and the I-710 station, a near-roadway site) to test overall performance.

Laboratory Testing

Sensors that demonstrate an acceptable performance in the field will be brought back to the lab for more detailed testing. A "characterization chamber" (set-up inside the SCAQMD laboratory) will be used to challenge the sensors with known concentrations of different particle and gaseous pollutants (i.e. both individual pollutants and different pollutant mixtures) under different temperature and relative humidity levels.

<u>Main Goals & Objectives</u>

- Provide guidance & clarity for ever-evolving sensor technology & data interpretation
- Catalyze the successful evolution / use of sensor technology
- Minimize confusion

Sensor Selection Criteria

- Potential near-tern use
- Real- or near-real time (e.g. 1-min)
- Criteria pollutants & air toxics
- Turnkey products first
- Price range: < ~$2,000 (purchase); > ~$2,000 (lease/borrow)

Type of Sensors That Are Being/Will Be Tested

- Electrochemical
- Metal Oxide
- Optical Sensors
- Other

Pollutants / Variables Measured

- Particle count and particle mass (e.g. PM2.5, PM10)
- Gaseous pollutants (NOx, CO, NO, H2S, SO2, VOCs, others)
- Meteorological parameters (e.g. T and RH)

Expected Results and Next Steps

- Provide the knowledge necessary to appropriately select, use, and maintain sensors and to correctly interpret their data
- Promote a better and more responsible use of available sensors
- Discover new and more effective ways to interact with local communities
- Provide manufacturers with valuable feedback for improving available sensors and for designing the next generation sensor technology
- Create a "sensor library" to make "low-cost" sensors available to communities, schools, and individuals across California

APPENDIX B. SAMPLING OF COMPLAINT HISTORY (2010 – 2014) – OIL AND GAS PRODUCTION FACILITIES

SAMPLE SURVEY

A sample of the 473 oil and gas production facilities complaint records were reviewed for the five year period between 2010 and 2014. The facilities were reviewed for the number of complaints received during along with identification of any notices of violation received for Rule 402 - Nuisance, Rule 1176 - VOC Emissions from Wastewater Systems, and Rule 1148.1. Detailed information, such as the outcome of the investigation including final complaint verification status and details on ~~the~~ any violation notices, require additional individual screening for each complaint and ~~has~~ have not been included in this Appendix.

SAMPLE RESULTS

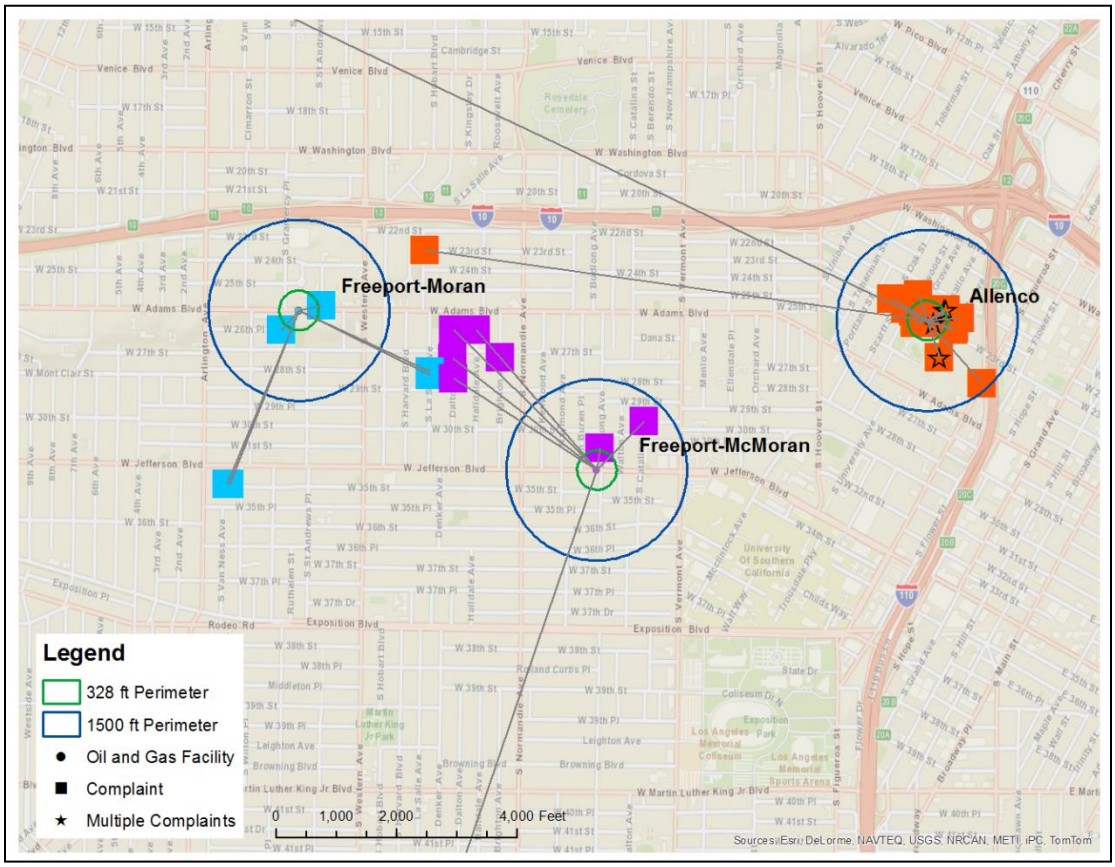
Over the reviewed five-year period, there were 26,986 total odor complaints identified and recorded by the SCAQMD. From this total there were 353 odor complaints that were alleged and identified as confirmed from industrial oil and gas wells facilities. The Table below lists facilities from the sample search, associated with the number of Rule 402 Nuisance notices of violation (NOV), along with other associated rule NOVs.

Facility Name	Location	No. Complaint	402 NOV	1176 NOV	1148.1 NOV
AllenCo Energy	Los Angeles	258	3	4	1
Angus Petroleum	Huntington Beach	58	0	0	0
Freeport McMoran	Jefferson St.	14	0	2	0
Holly Street Inc	Huntington Beach	8	0	0	0
Freeport McMoran	W. Adams Bl.	7	0	2	0
Amtek Construction	Whittier	3	0	0	1
Oxy USA Inc	Carson	1	0	0	0
Matrix Oil Corp	Whittier	1	0	0	0
Greka Oil & Gas Inc	Placentia	1	0	0	0

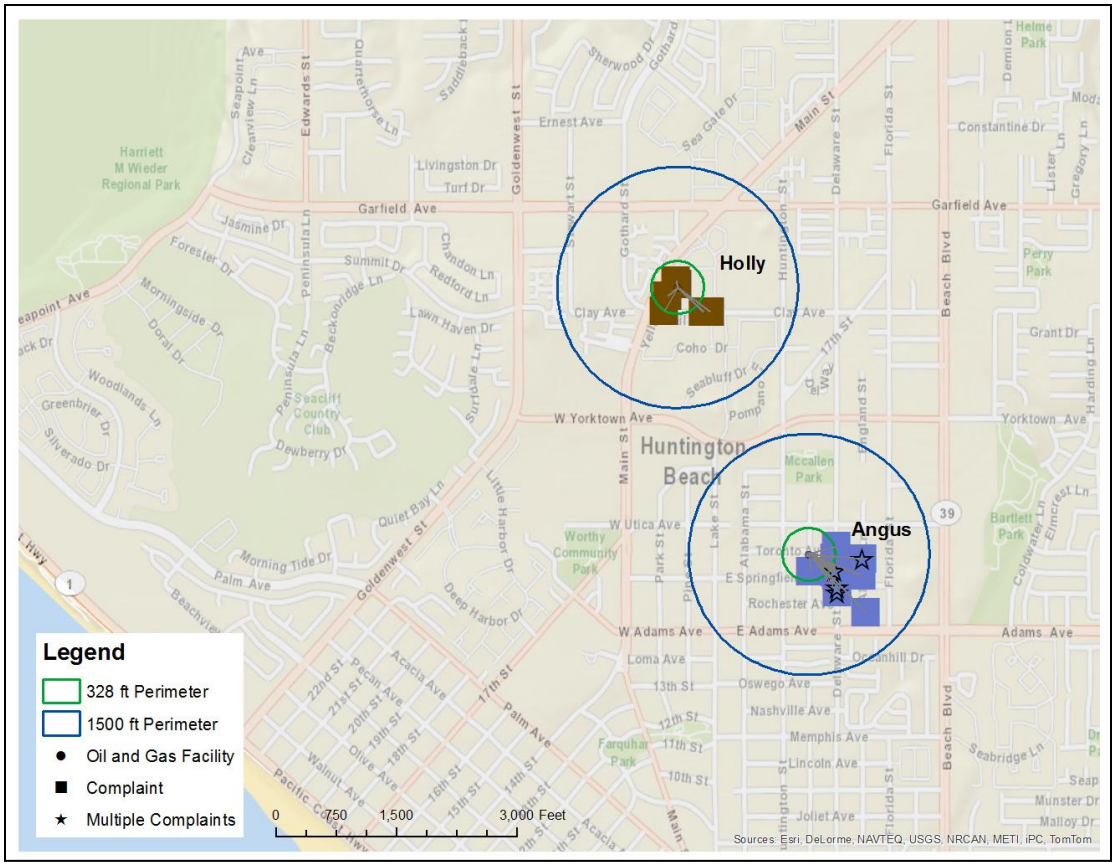
MAPS

A graphical map display was used for the facilities from the list above to help illustrate the distance from the facility to each of the complainants. The larger circle represents a sensitive receptor distance of approximately 1,500 feet from the proposed amendment and the smaller circle is the radius distance of 100m or 328 ft used for sensitive receptors based on the existing rule. The center of the 328ft radius circle is the location of the oil and gas

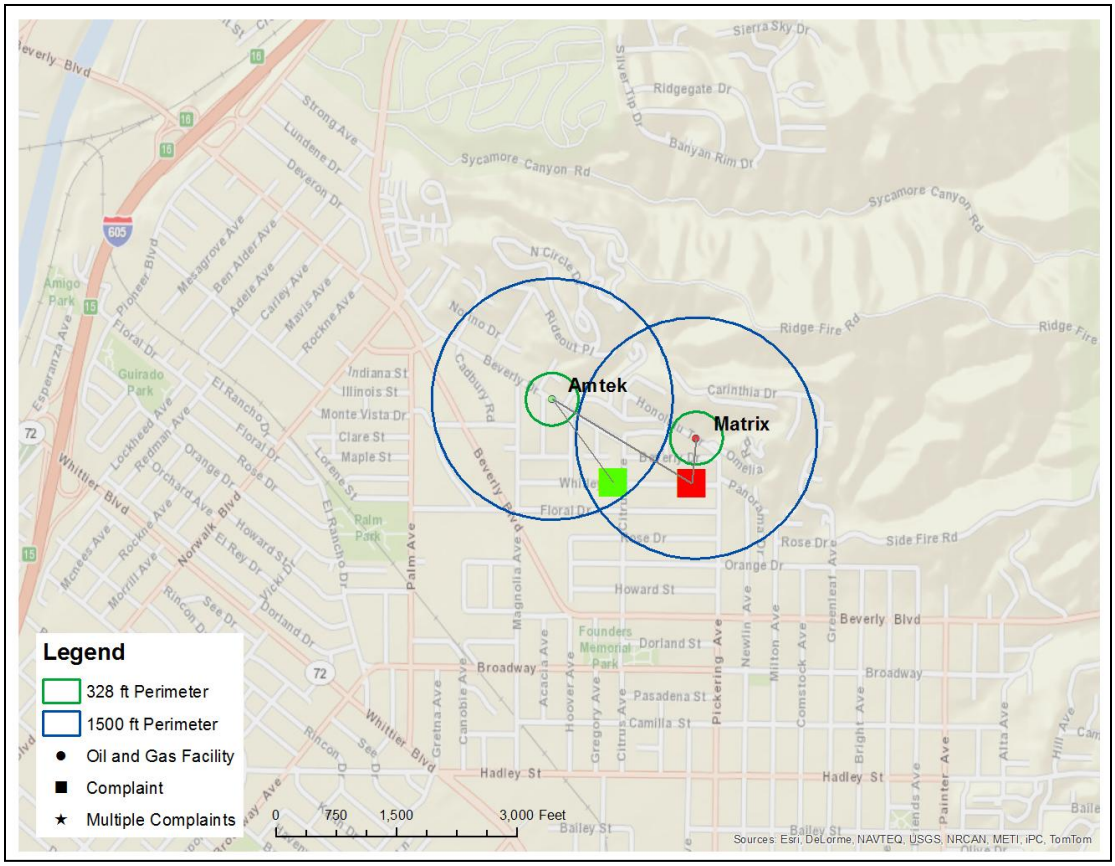
production facility and the square dots within and outside the 1,500 foot radius and 328 foot radius represent logged odor complaints. The stars represent approximate locations of multiple complaints for several alleged events over the five-year period.



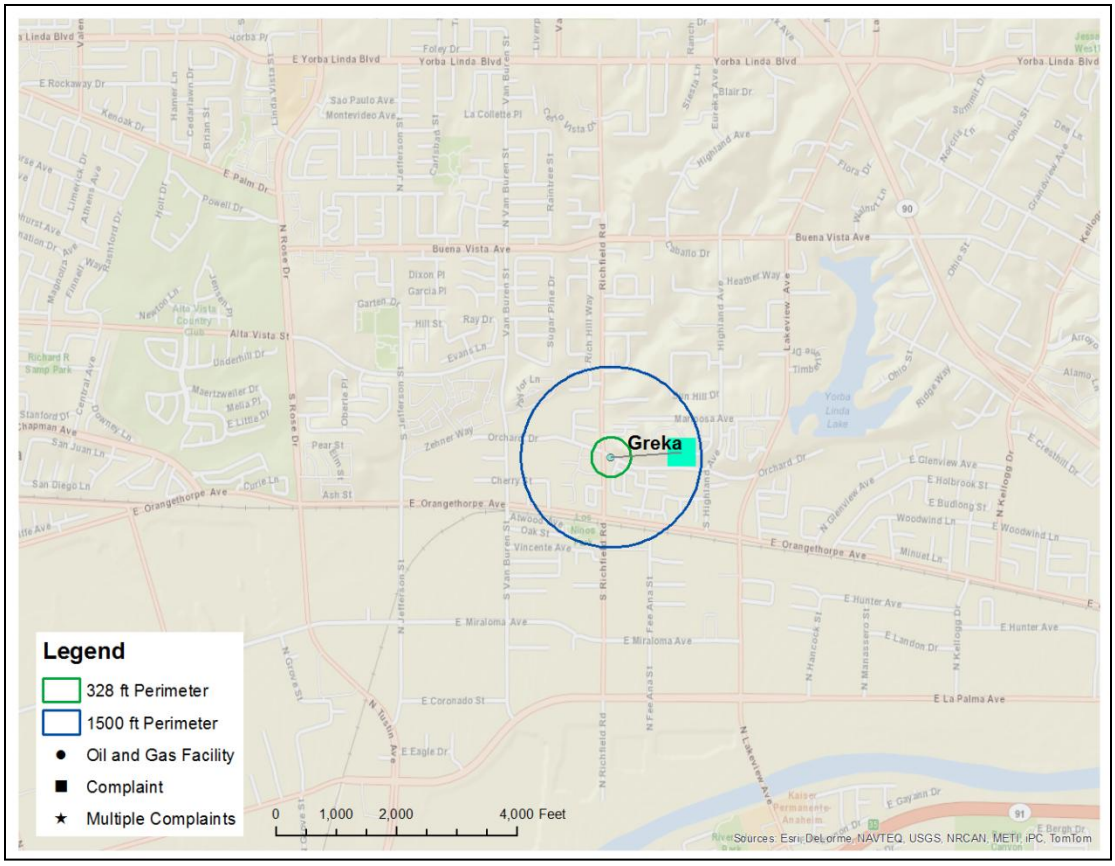
The above graph represents three oil and gas production facilities that are within two square miles, located near the Los Angeles Downtown Area. The grouping of complaint locations are mostly outside the 100 meter or 328 foot radius with the exception of Allenco, which has large grouping along its facility boundary. Also notable is the amount of complaints that are from outside the 1,500-foot radius. However, these complaints have been ~~verified~~ identified as confirmed at the address and ~~traced upwind to~~ the specific oil and gas production facility according to this sample search, although final verification status has not been specifically reviewed.



Angus Oil, located in the City of Huntington Beach, has complainants that live mostly across the street from the oil and gas production facility. There are several blocks of condominiums and townhomes that border the oil production facility on two sides. The consistent factor is that the oil and gas production facilities are located near residential neighborhoods. The proximity to a densely populated residential neighborhood increases the likelihood of complaints with moderate to low wind movement during particular activities.



The above map identifies two Whitter oil and gas production facilities that are approximately 1,500 feet from each other. These two facilities are also situated in residential neighborhoods, but the population density is not as high as downtown Los Angeles and Huntington Beach, as shown through satellite mapping, and have historically lower odor complaints, if any, during any given year.



Oil and Gas Production facility located in the City of Placentia. The facility is located in a mixed-use and open area, and has only one confirmed odor complaint for a five year period.

OBSERVATIONS

The following was noted in the review of the complain history and proximity review:

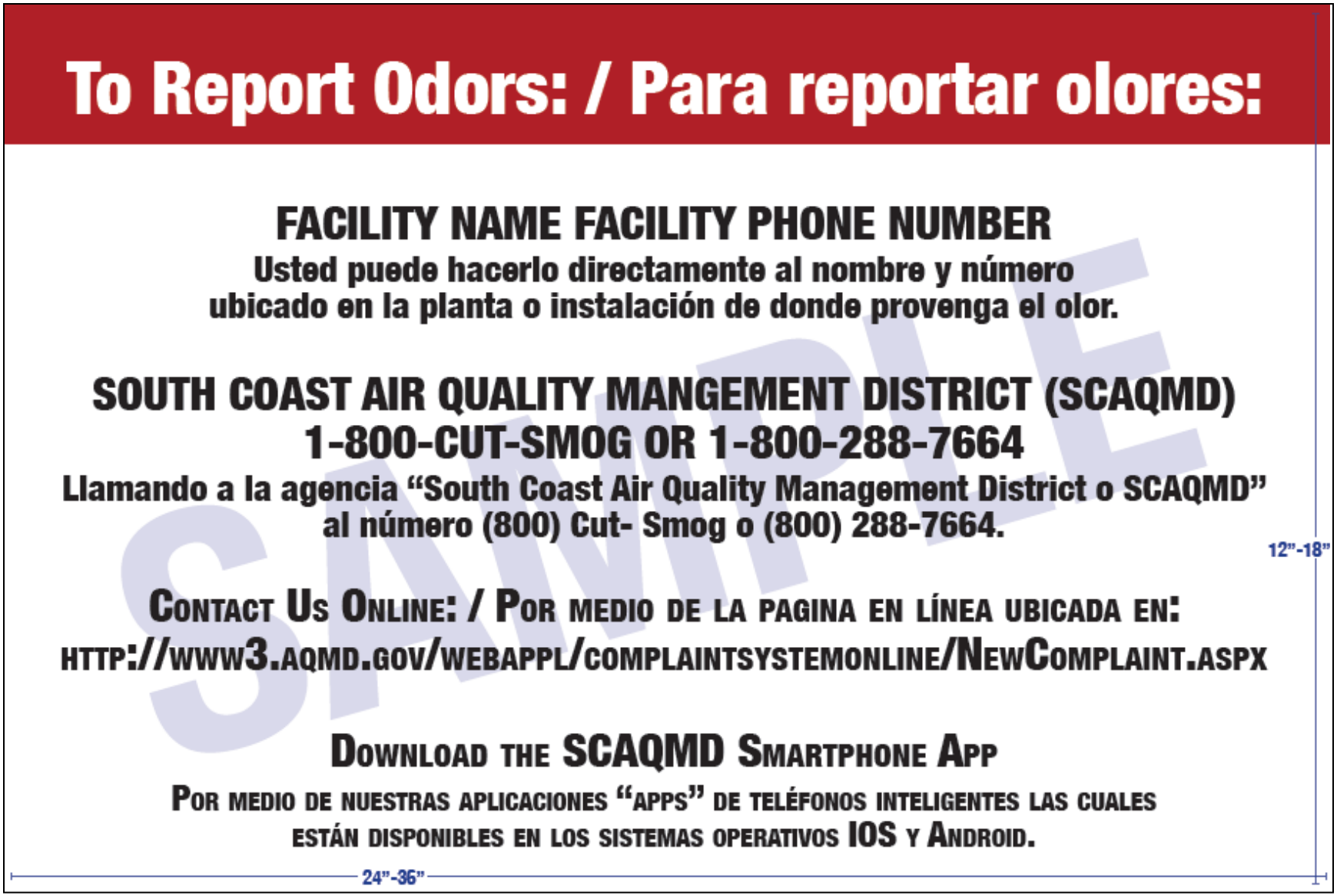
- At farther distances and lower population density, complaint activity decreases.
- Conversely at closer distances and greater population density, complaint activity increases.
- Many complaints are registered within 1,500 feet.
- Some facilities, while located in close proximity to sensitive receptors, do not have a significant nuisance complaint history.

APPENDIX C. PAR 1148.1 (d)(~~12~~13) – SAMPLE INFORMATION SIGNAGE

Instructional Information Requirement

PAR1148.1 (d)(~~12~~13) requires owner and operators, 30 days after the rule becomes effective, to post instructional signage for the reporting of odor complaints. The sign must be placed in a conspicuous location and under such conditions as to make it likely to be read or seen and understood by an ordinary individual during both normal operating and non-operating hours, for example near the facility entrance. The sign must contain information that informs the complainant of the facility's name, facility contact information, and instructions to contact the South Coast Air Quality Management District at the 1 800 CUT-SMOG number. The information must be posted in English and Spanish.

The following page is a sample of the type of signage that could be used to meet the requirements of paragraph (d)(~~12~~13) of the proposed amended rule.


To Report Odors: / Para reportar olores:
FACILITY NAME FACILITY PHONE NUMBER
Usted puede hacerlo directamente al nombre y número
ubicado en la planta o instalación de donde provenga el olor.
SOUTH COAST AIR QUALITY MANGEMENT DISTRICT (SCAQMD)
1-800-CUT-SMOG OR 1-800-288-7664
Llamando a la agencia "South Coast Air Quality Management District o SCAQMD"
al número (800) Cut- Smog o (800) 288-7664.
12"-18"
CONTACT US ONLINE: / POR MEDIO DE LA PAGINA EN LÍNEA UBICADA EN:
HTTP://WWW3.AQMD.GOV/WEBAPPL/COMPLAINTSYSTEMONLINE/NEWCOMPLAINT.ASPX
DOWNLOAD THE SCAQMD SMARTPHONE APP
POR MEDIO DE NUESTRAS APLICACIONES "APPS" DE TELÉFONOS INTELIGENTES LAS CUALES
ESTÁN DISPONIBLES EN LOS SISTEMAS OPERATIVOS IOS Y ANDROID.
24"-36"
SAMPLE